Journal of THE AMERICAN DIETETIC ASSOCIATION

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Grace Bulman

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A.D.A. Awards for 1954

Adequate Therapeutic Diets

The Dietitian-Patient Relationship

Selective Menus for Therapeutic Diets

38th A.D.A. Annual Meeting, St. Louis October 18–21, 1955

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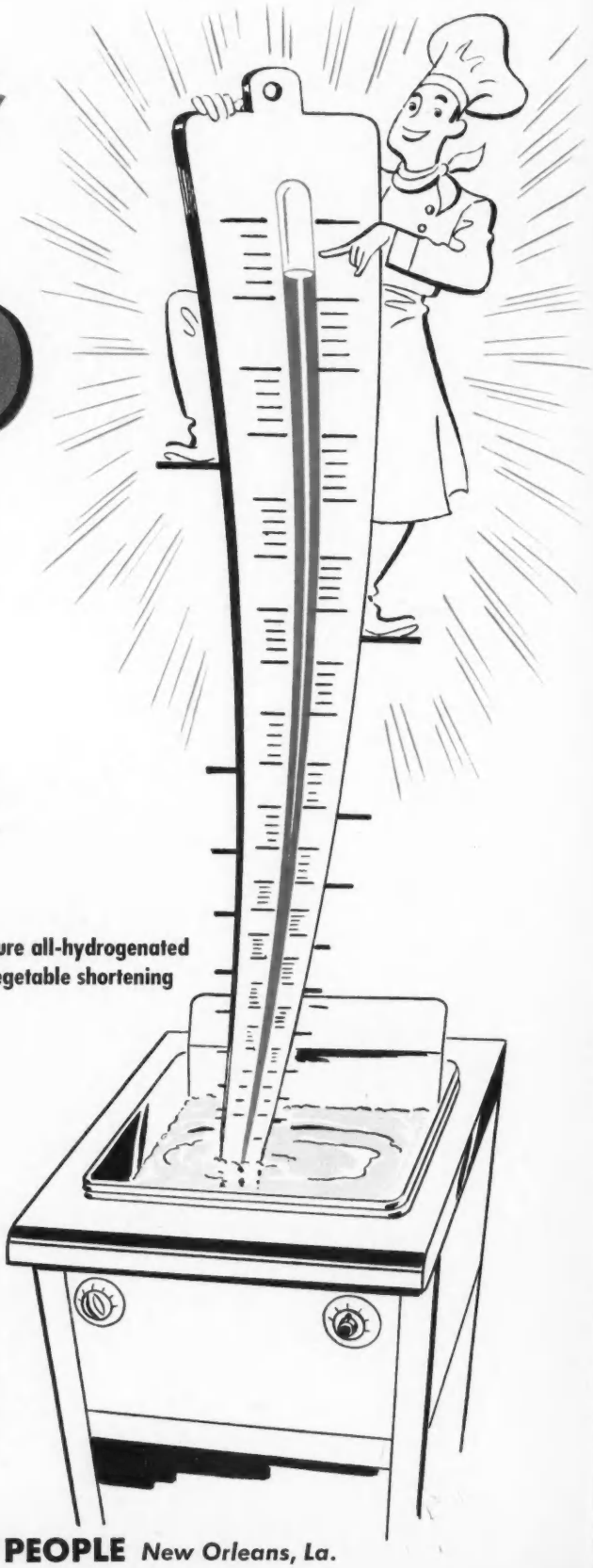

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The President's Report to Members of The American Dietetic Association—1953–54[1]

GRACE BULMAN

Director, Dietetic Service, Department of Medicine and Surgery, Veterans Administration, Washington, D. C.

IN President Eisenhower's greetings to the 1954 Health Forum he said, "The cooperation of dedicated people is the source of a multitude of achievements—scientific as well as social—that have contributed to this nation's strength and welfare. In that light, progress toward the improved health of our people will surely result from partnership of the professions, the volunteer organizations and the official agencies concerned with health." There can be no better example of a multitude of achievements through the cooperation of dedicated people than our own American Dietetic Association. Before we may point with pride to milestones set up this year, we must give recognition to the excellent ground work laid and progress made by our predecessors. Because of the quality of past endeavors and the ever-present spiritual sensitivity toward the objectives of our profession, we have been able to complete a few projects, advance with others, and initiate new ones.

The way our Association has progressed this year and each preceding one is reflected in the following lines of Edwin Markham:

> Why build these cities glorious
> If man unbuilded goes?
> In vain we build the world
> Unless the builder also grows.

In this, the thirty-seventh year of The American Dietetic Association, we are impressed with the stature of our professional city—but, only because of the way in which the builders, our members, have also grown. In 1938, when our Association came of age, Lenna Cooper, then President, expressed the hope that we might eventually reach a goal of 10,000 members. Sixteen years later we are pleased that the membership has passed Miss Cooper's goal and is now pushing past 11,000. She gave us sound advice when she said (1), "In celebrating our twenty-first birthday it is appropriate that we should take a long look ahead, define our aims and our philosophy, and thus secure to our profession and to our successors the benefits and good-will due to a continuing policy, conservative yet progressive."

Would that I could "spin the wheel of fortune" to let it select a few of our highlight activities to discuss briefly. It seldom happens that any one year in the advancement of a professional organization is marked by spectacular growth but rather by steady achievement with projects begun in previous years or through the initiation of new programs. This is borne in mind as we now pay attention to particular interests. The ones I have chosen in no way minimize the importance of the numerous other fine projects developed by the four Sections, or the untiring efforts of the various committees and the noteworthy individual contributions by many of you—the true builders of our profession.

INTERNATIONAL CONGRESS OF DIETETICS

As we turn back the pages of memory to 1952 when our annual meeting was held in Minneapolis, we find a significant event recorded there. Our President that year told us of the First International Congress of Dietetics in Amsterdam and pointed out the notable planning and participation by representatives of The American Dietetic Association. Vital topics at that meeting included: the exchange of dietitians and students, study of the educational differences in the various countries, specific international dietetic problems, and the need for uniformity in defining the position of the dietitian.

To meet the need for a clarification of the professionally qualified dietitian's position that would be appropriate for international use, a special committee has worked diligently and thoughtfully for the past two years. That definition has now been completed well in advance of the next International Congress to be held in Rome in 1956.

DIETETIC INTERNSHIPS

Two accomplishments of the year that reflect interest and a feeling of responsibility toward the

[1] Presented in Philadelphia at the business meeting of members of The American Dietetic Association on October 26, 1954.

development of successful future dietitians—our dietetic interns—are the *Generalizations for the Curriculum Guide for the Dietetic Intern* and the Evaluation Scales.

The *Guide*, which is just off the presses, was sponsored by the internship directors and was concluded through the fellowship awarded to Marjorie White.

The development of the Evaluation Scale Forms for dietetic interns and graduate dietitians was a two-year project of the Dietetic Internship Board and the Professional Education Section. A Manual was created to direct their proper application for both interns and graduate dietitians. Following the orientation period, it is hoped the objective of this scale, namely, to contribute toward the improvement of the intern's performance and her self-improvement, likewise that of the dietitian, will be attained.

MEMBERSHIP REQUIREMENTS COMMITTEE

The maintenance of the high standards of our professional organization through the years has been a reality of which we can be justly proud. The membership requirements have undoubtedly made it so, but the rapidly developing field of dietetics with its numerous specialty phases—and the fact that anything good might be better or more appropriate—has indicated a need for an inventory. The ardent efforts of the committee appointed to study the membership requirements under the leadership of a very competent chairman have resulted in proposed modifications which have been referred to you, the membership.

SHORTAGE OF DIETITIANS

The increasing shortage of dietitians created impetus for fertile action in two approaches to more efficient use of available professional service. Our Public Relations Director, Thelma Pollen, has given us excellent information on plans for sharing dietitians by small hospitals in her recent articles, one in the May 1954 issue of *Hospitals* and the other in the September 1954 JOURNAL. The facts presented are based on her observations in Michigan and Illinois where "shared dietitians" are actively doing the job successfully. It is hoped that enthusiasm of both hospital administrators and dietitians will be kindled to expand this type of service. A report of twenty-five state dietetic associations on the various services they were giving to small hospitals without dietitians was most gratifying. This was summarized in the September *Courier*.

A second approach to the problem of dietitian shortages is reflected in the delegation of certain duties to non-professional personnel. An extensive study of the food service supervisors by the Association has been made during the past seven years, and the current Joint Committee of the American Hospital Association and A.D.A. has made appreciable progress in this area. Duties of such workers, including routine ones too often done by dietitians, have been set up as guide material for training these employees at the academic and experience levels.

OUR JOURNAL

The large subscription list for the JOURNAL over and above that for the membership is recognition of respect for its content. The extensive abstract section provides us with an invaluable reference reading source in all phases of our field. Many favorable remarks have been heard relating to the recent improvements in the JOURNAL by increasing the editorial space, particularly the Current Comment section. The reports of our representatives who have attended allied professional meetings are significant in portraying our place in health programs—national and international. All in all, we are proud of our JOURNAL.

CIVIL DEFENSE PARTICIPATION

There are many evidences that A.D.A. has been alerted to the urgency of a strong national Civil Defense organization and its various functioning arteries at the state and local levels. The admirable enthusiasm and accomplishments in effect prior to this year in this program have made appreciable gain over the past several months under the stimulating guidance of the present chairman. Our membership throughout the country is engaged in various aspects of the mass feeding program—serving on emergency feeding committees, planning and setting up action programs, preparing training materials, and teaching volunteers. Significant contributions have been made toward a higher degree of operational readiness in this important phase of mass care in case of disaster.

Although much lies ahead to be done, an excellent start has been made, as you shall learn from the many interesting details which will be published in the complete report of this committee.

JOINT COMMITTEE OF THE MENTAL HOSPITAL DIVISION, AMERICAN PSYCHIATRIC ASSOCIATION, AND A.D.A.

A large portion of our membership has had deep concern for several years about dietary care in the mental hospital program. This year a new Joint Committee from the Mental Hospital Division of the American Psychiatric Association and The American Dietetic Association was formed. Members were drawn from the area of Washington, D. C., so as to provide an active working group that could meet frequently. Their purpose has been to evolve practical measures which will attain objectives to meet the needs of the mental patient.

PUBLICATIONS

The Association's printed materials, through its Publications and Reprints List, keeps us current

with the career leaflets and other professionally valuable items. Display them at state meetings!

The new leaflet, *About The American Dietetic Association*, prepared by our Public Relations Director, was designed to satisfy several current needs and replaces the former "Descriptive Folder." It is an excellent means of acquainting non-members with our Association.

As a result of the promotion of careers in dietetics, the *Missouri Farmer*, a magazine read by over 150,000 farm families, published an article on careers in dietetics in June. Also, during the year, The American Dietetic Association was included in popular magazine and newspaper articles featuring outstanding women's organizations.

EXHIBITS

From October, 1953, through June of this year, A.D.A. educational exhibits appeared at meetings of the following allied associations: American Public Health Association, International Dairy Show, American Dental Association, American Medical Association Clinical Session, American Academy of General Practice, Chicago Medical Society, Chicago Dental Society, American Personnel and Guidance Association, American Nurses Association, National Conference of Social Work, Catholic Hospital Association, Illinois State Medical Society, Wisconsin Health Meeting, Marion County (Indiana) Health Fair, Middle States Public Health Conference, Upper Midwest Hospital Conference, Middle Atlantic Hospital Assembly, and the New York Public Health Workers' 50th Health Conference.

The sale of commerical exhibit space for this 37th Annual Meeting of our Association has exceeded all previous records. As we visit these exhibits, we can well be proud of them from the standpoint of quality as well as quantity.

CONCLUSION

As has been said in different ways by those who have preceded me, but always with the same note of sincerity and humility, it is a great honor and privilege to serve as President of this Association. Those of us who are given this opportunity gain much more than we can possibly give during our year in office. Thus, we are forever indebted to you, the members, for providing us with such a rich experience. I shall always be grateful for the visits to state meetings that gave me the opportunity to know so many of you personally. Likewise, I am most appreciative of the fine and enthusiastic support that has been accorded me by the states, the Executive Board, and all other members of the Coordinating Cabinet and House of Delegates, the headquarters staff, the various boards and committees of the Association. To my co-workers in my daily work, I also owe a lasting debt of gratitude for the cheerful way in which they have shared many of my duties this year and made it possible for me to devote more of my time to Association activities.

The happiness we enjoy today as an Association of experts in the field of nutrition and dietetics is the result of member effort day by day through the past thirty-seven years. What the future holds for dietetics depends on us. Let us keep our shoulders to the wheels of progress and our eyes on the guiding stars of opportunity in our field and remember the wise words of Benjamin Franklin when he said:

> Human felicity is produced not so much by great pieces of good fortune that seldom happen, as by little advantages that occur everyday.

REFERENCE

(1) COOPER, L. F.: The dietitian and her profession. J. Am. Dietet. A. 14: 751, 1938.

Outdoor Milk Vending Machines

Large outdoor automatic milk vending machines are now appearing in various parts of the country, enabling family food shoppers to buy milk at any hour of the day. The machines hold as much as 2000 qt. milk, refrigerated at 38°F. or lower, and sales are made in quart and half-gallon cartons. Delivery and operating expenses are low enough that milk can be sold at 2 cents a quart below that in stores.

Try-outs of these outdoor vendors were first made by a dairy cooperative in the Minneapolis-St. Paul area in 1952 and 1953. With nineteen machines in operation late last year, the tests indicated an average daily sale per machine of 140 half-gallon containers of milk. Since then, machines have been installed in many states, and records show that, when they are conveniently located, milk sales are increased. A particularly good "location" appears to be near gasoline stations where it is easy to drive up and stop and where the machines have good lighting by night.

Sales records indicate the greatest use of the machine between 5 and 8 p.m., although much milk is also sold after midnight. Patrons include men on their way home from work and hurried shoppers, as well as families who need milk on weekends and holidays, or at off-hours.

Quantity vending machines for milk are also being used in large apartment houses in New York City and Chicago.

Hospital Diets in Eighteenth Century England[1]

WILLIAM BERNARD RABENN, M.D.[2]

Department of History of Medicine, University of Wisconsin, Madison

ENGLAND during the eighteenth century produced a type of hospital uniquely different from any that had existed before either at home or abroad. Founded and operated by private citizens with funds obtained through popular subscription, the voluntary hospital was a direct manifestation of the ideas of enlightenment that were to pervade the entire century. Philanthropy had become the watchword of the era. It sought to embrace the "little man", caught in the flux of a dynamic transition from an agrarian to an industrial economy. B. Kirkman Gray states (3) that this was "the period in which first the hospital, and a little later those other charitable institutions with which our own age is so familiar, began to multiply in London and then as a very rapid sequel in the chief provincial towns."

Unfortunately, the hospitals created by enlightened philanthropy fell far short of modern standards. The reasons for this failure were inherent in the relative scientific and philosophical immaturity of the time. Without the benefit of sufficient scientific knowledge concerning the prevention and treatment of disease, medical philanthropy was at best a haphazard venture with nebulous goals. Despite this, more positive gains would have become evident had humanitarian attitudes been developed to a greater degree, but such was impossible in an age uncertain of the extent of its social obligations. Thus there developed a species of hospital possessing certain glaring inadequacies. Thomas Percival, a prominent eighteenth century medical critic, observed (4), "It is a melancholy consideration that these charitable institutions, which are intended for the health and preservation of mankind may too often be ranked amongst the causes of sickness and mortality."

John Howard, in his role as a private investigator of public charities, described (5) the worst features of English hospitals as defective buildings and overcrowding. This observation cannot be refuted, but on study of the contemporary hospital diet tables, one is struck by another defect equally unsatisfactory in the light of current dietetic knowledge. The nutritionally poor and often unpalatable diets deserve more than just a casual historical glance.

Despite local differences, there was a general similarity of diets in most areas. The constant exchange of ideas exhibited in the repeated issuance of manuals of hospital practice assured some homogeneity. Provincial hospitals in the earlier period adopted diet tables created by the London institutions, but in the latter half of the century they seem to have offered a more divergent and generous food allowance than could be obtained in the metropolitan area. The greatest variation during the period, however, lay in the type and number of different diets provided patients.

THE REGULAR DIET

In the earlier schedules throughout England there was only one bill of fare, variably known in different locales as the general, full, common, or ordinary diet. Although most of the hospitals soon modified their menus, a few maintained the old standard far into the century. The London Hospital, for example, as late as 1740, passed an ordinance in which "it was agreed that no other diet be expected or allowed on any account whatever" (6). This hospital was re-

[1] This paper is a condensation of a thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Medicine and deposited in the Library of the University of Wisconsin. The author has prepared a second paper, as yet unpublished, concerning the development of the British hospital system in the eighteenth century. The reader is referred to Ives (1) and Evans and Howard (2) for general background information pertaining to the history of British hospitals. Received for publication September 8, 1954.

[2] The author wishes to express his appreciation and gratitude to Dr. Erwin H. Ackerknecht, Professor of History of Medicine, University of Wisconsin, for his advice and encouragement throughout this study of the British hospital system. The author is also indebted to the Asa S. Bacon Memorial Library of the American Hospital Association for the use of many references which would have otherwise been unavailable to him. Present address: Indiana University Medical Center, Indianapolis.

TABLE 1

Representative "full" diets of English hospitals in the eighteenth century

MEAL	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
St. Thomas's Hospital, 1710 (3)							
Breakfast, dinner, and supper combined	8 oz. boiled boneless beef; 1 qt. or 3 pt. broth	same as Sunday	8 oz. boiled mutton broth as on Sunday	4 oz. cheese 1 oz. butter 1 pt. milk pottage	same as Sunday	same as Sunday, *or* 1 qt. milk pottage and 2 pence in money	4 oz. cheese 2 oz. butter 1 pt. rice milk
Additions to the above	12 oz. bread 3 pt. beer	same each day of the week					
Westminster Hospital, 1720-33 (7)							
Breakfast	1 pt. broth or water gruel	same each day of the week					
Dinner	16 oz. beef or mutton (reduced to 8 oz. in 1733)	rice or oatmeal pudding cooked with milk	same as Sunday	same as Monday	same as Sunday	same as Monday	same as Sunday
Supper	suet pudding 2 oz. butter	same each day of the week					
Additions to above	14 oz. bread 3 pt. small beer	same each day of the week					
St. George's Hospital, cerca 1733 (8)							
Breakfast	1 pt. water gruel	same each day of the week					
Dinner	8 oz. boiled beef	1 pt. pease pottage 4 oz. pudding	8 oz. boiled mutton	1 pt. plumb pottage 4 oz. pudding	same as Sunday	same as Monday	same as Sunday
Supper	1 pt. broth	2 oz. cheese *or* 1 oz. butter	same as Sunday	1 pt. milk pottage	same as Sunday	same as Monday	same as Sunday
Additions to the above	14 oz. bread 2 to 3 pt. beer	same each day of the week					
Manchester Infirmary, 1769 (9)							
Breakfast	1 pt. water gruel *or* milk pottage	same each day of the week					
Dinner	8 oz. boiled beef, mutton, or veal 8 oz. roots	1 pt. rice milk	same as Sunday	12 oz. baked pudding	same as Sunday	same as Monday	same as Sunday
Supper	1 pt. broth	same each day of the week					
Additions to the above	as much bread and beer as desired	same each day of the week					
Nottingham General Hospital, 1781 (10)							
Breakfast	1 pt. milk pottage or water gruel	same as Sunday	1 pt. milk pottage or panada	same as Sunday	same as Sunday	1 pt. water gruel	same as Tuesday
Dinner	8 oz. roast or boiled beef, veal, or mutton with roots or greens (meat increased to 4 lb. weekly in 1782)	1 pt. rice milk *or* 12 oz. baked pudding	1 pt. broth 4 oz. boiled mutton or beef with 8 oz. roots or greens	12 oz. baked pudding *or* 12 oz. boiled roots	same as Sunday	same as Monday	same as Tuesday
Supper	1 pt. broth	2 oz. cheese *or* 1 oz. butter	same as Sunday	1 pt. broth or milk pottage	same as Sunday	same as Monday	same as Sunday
Additions to the above	14 oz. bread 2 to 3 pt. beer	same each day of the week					
Haslar and Plymouth Royal Hospitals, 1788 (11)							
Breakfast	1 pt. milk pottage	same menus each day of the week					
Dinner	16 oz. meat 1 pt. broth						
Supper	broth left at dinner *or* 1 pt. milk pottage						
Additions to the above	16 oz. bread 3 pt. beer						

markable for its consistently below-average dietary allowances. It is interesting to note that in 1756 precedent was broken when arrangements were made for the treatment of Jews as in-patients. Dietary adjustments were necessitated and solved rather simply. From the records (6): "Jews are to be allowed two and one half pence a day in lieu of meat and broth, but to receive bread and beer like the other patients." This sum enabled Jewish patients to obtain approximately the same daily food allotment as under the normal full diet.

TABLE 2

Representative fever (low) diets of English hospitals in the eighteenth century

MEAL	MENU
St. George's Hospital, 1733 (8)*	
Breakfast	water gruel or milk pottage
Dinner	small quantities of meat, four times a week plumb pottage and pudding, three times a week
Supper	same as breakfast
Additions to the above	none
Manchester Infirmary, 1769 (9)*	
Breakfast	1 pt. water gruel or milk pottage
Dinner	1 pt. broth and 2 oz. roots 1 pt. rice milk *or* 8 oz. bread pudding (each one on alternate days) occasionally, 2 oz. veal instead of roots
Supper	same as breakfast except on Wednesday and Friday, when patients could have 1 oz. butter or 2 oz. cheese
Additions to the above	bread without waste and up to 1 pt. beer daily
Edinburgh Royal Infirmary, 1778 (12)*	
Breakfast	bread and milk *or* oaten or barley meal porridge *or* gruel or panada
Dinner	bread and milk, panada, sago, rice and milk caudle, or barley boiled with currants wine as ordered
Supper	same as breakfast
Additions to the above	sufficient bread without waste and up to 1 pt. beer daily
Bristol Royal Infirmary, cerca 1780 (13)*	
Breakfast, dinner, supper, and additions	as tolerated, one or more of the following: water gruel, panada, sago, very thin broth, rice gruel, barley gruel, barley water, toast and water, pippin water, cider whey, and baum or sage tea

* As tolerated.

In Table 1 representative full dietary schedules of various English hospitals during the progression of the century are given. The earliest tables usually stated the daily provisions rather than specifying set amounts of food for each meal. Meat allowances remained rather constant at 2 or 2½ lb. a week. Some hospitals in the latter part of the century provided as much as 7 lb. per week, but this was exceptional. Meat was most often served boiled so as to obtain broth: "For every gallon of broth put in three pounds of mutton or two pounds of lean beef . . ." (9).

The full bread allowance varied from 12 to 16 oz. a day, and wheat bread eventually superseded breads made of rye, barley, or oats. Various pottages and puddings were served to round out the daily menu. Patients seldom received milk as a beverage; hospital purchases of milk annually averaged but one-fourth that of beer. The latter was allowed in quantities of 2 to 3 pt. a day. Small amounts of cheese and butter were also added to the full diets. Roots and greens found eventual inclusion.

The middle, or half diet was introduced early in the century to prevent food waste by those patients unable to eat the full allowance. It provided about half the volume of the full diet, otherwise being the same. The following middle diet schedule of the Haslar and Plymouth Hospitals in 1788 is included for comparison with the full diet of these same institutions (Table 1) (11).

Breakfast
milk pottage
Dinner
½ lb. mutton
some light pudding
or
some greens
Supper
1 pt. broth
1 lb. brea
1 qt. small beer

FEVER THERAPY

Clinical experience soon demonstrated the need for greater variation of nutrition in the treatment of different diseases. Schedules for fever, milk, dry, and salivating diets gradually appeared. They are representative of a trend toward the individualization of therapy in which physicians sought to treat signs and symptoms rather than particular diseases. Because of the frequent occurrence of septic fevers, special allowances were first made for feverish patients.

Much controversy arose continuously as to what should constitute a proper food program during a

fever. Table 2 illustrates some of the changes that transpired after the introduction of fever diets. A predominant tendency developed to exclude the heavy solid foods which were at first carried over from the full dietaries. Favorite fever foods were pap, panada, and water gruel.

Pap was made by cooking flour or bread in water with or without the addition of milk. Panada differed from pap in that various preparations of flour cereals or bread were cooked in broth with either butter or milk (14). Water gruel consisted of cereals boiled with water. This last item was considered most beneficial in the care of charity cases (15):

> Hail! Water gruel, healing power, of easy access to the poor

All three of the above foods were often included in other diets, since they were inexpensive and easily prepared.

By the end of the seventeen hundreds, newer concepts of fever therapy had appeared. A Dr. Fordyce writing *On Putrid and Inflammatory Fevers* expressed a popular viewpoint prevailing in the late period (16):

> It appears then on the whole, that the food in a putrid fever should consist of barley, rice, oatmeal, wheat bread, sago, salop, mixed with wine, lemon, orange, citron, or chaddock juice, jellies made of currants and other acescent fruits; and when broths are thought absolutely essential, which probably happens but seldom, they should be mixed with currant jellies, citron, lemon, and orange juices.

Although such a diet was generally conceded to be highly desirable, its prohibitive cost precluded standard usage.

A notable gain was registered when milk diets began to be prescribed for those convalescing from a fever. Such a measure allowed a more gradual return to the middle and full diets. The basic constituents of the milk dietary were milk, pap and panada, milk pottage, water gruel, porridge, rice milk, and pudding. St. Thomas's diet table of 1788 provides an excellent example of a milk diet (11):

Breakfast
milk porridge, four days
water gruel, three days
Dinner
1 pt. rice milk, four days
or
8 oz. pudding (if possible), three days
Supper
same as breakfast
Daily in Addition
12 oz. bread and 3 pt. drink daily
in summer 1 qt. drink in winter
(drink consisting of one part
of milk and two parts water)

Other hospitals followed the same essential plan but substituted from the basic list.

OTHER DIETS

A comparatively late innovation (mid-century) was the dry diet which markedly restricted fluid intake. Physicians thought this best for patients exhibiting peripheral edema or ascites. A typical dry schedule consisted of 1 oz. butter or 2 oz. cheese for breakfast and supper with as much bread or sea biscuits as desired. At dinner, the hospital provided 6 oz. of either boiled beef, mutton, or veal and 8 oz. roots. This was alternated daily with 8 oz. boiled rice or 12 oz. baked pudding. One pt. beer or cider served as the only fluid allotment for the day (9, 13). The reasoning behind this diet is clearly evident, but with an abundance of salt being used in food preparation, it only contributed to the downward progress of patients.

Large amounts of mercurials found rather extensive use during the eighteenth century. Since patients were often dosed to the point of salivation and emesis during these treatments, a special "salivating" diet was essential. Such a menu usually consisted of the daily administration of 1 qt. milk and the broth from ½ lb. mutton, beef, or veal. No solid food was allowed, but the patient additionally received 1 pt. warm beer every hour during the day, and ½ pt. an hour at night (8). This diet best served its intended purpose in comparison to the results achieved with other special schedules.

FOODS OMITTED FROM DIETS

Many foods now considered mandatory were almost completely excluded from the majority of the above hospital dietaries. Fish was rarely served due to a national preference for meat. Without proper refrigeration, fish often spoiled in transit, but meat could be had in every locale. This fact caused it to be cheaper and, in consequence, in greater demand. Gregory King in the beginning of the eighteenth century estimated (17) that of a total population in England of 5,500,000, approximately 2,700,000 ate meat daily while another 1,500,000 obtained it at least twice weekly.

Fruits and vegetables were not provided in the earlier period since their nutritional value found little appreciation; some clinicians even suspected them of being harmful. Thomas Trotter, one of the great late eighteenth century advocates of lime juice as an anti-scorbutic, felt (18) that peas, beans, and raw vegetables should be avoided by those with a "nervous" predisposition (most English were considered subject to "nervousness"). He expressed a fear of irritating the stomach which was to be thought of as "a center of sympathy between noncorporeal and mental parts . . . [and] . . . more sensitive than the brain." A good cheap food like the potato was rarely included in hospital diets; instead rice was served in various forms.

Most hospitals eventually made some arrangement for supplementing their diet tables, but no absolute

provision was guaranteed. Many unsuccessfully attempted to grow large enough quantities of vegetables to meet their needs. The Royal Infirmary at Edinburgh exhibited a progressive attitude when the following was added to its rules in 1778 (12):

> Besides the food mentioned in the different diets, the various fruits, in their respective seasons, may be ordered, as apples, pears, whether cooked or raw, cherries, gooseberries, strawberries, etc.

In 1788, Haslar and Plymouth ordered (11) that ". . . rice milk, orange whey, orange and lemon water, tamarind whey and water, vinegar whey, balm tea, sage tea . . . be discretionally ordered by the physicians and surgeons." Such allowances, however, were not widespread. Deficient operating funds continued to plague many institutions and to limit the modification of diets.

ALCOHOLIC BEVERAGES

Beer found almost exclusive use as the normal hospital beverage. This beer was mild (alcoholic content, 1.28 per cent) (7)[3] and undoubtedly preferable to the supply of normally contaminated water. The best authorities of the time considered it quite nourishing, but the vicious adulteration of beer by many breweries caused much concern. Some of the hospitals accordingly decided to make their own and, like the Nottingham General Hospital in 1782, proceeded to buy the necessary equipment (10):

> Ordered: That Mr. Hallam be desired to purchase at the sale at the Feathers Inn, the following Brewing Utensils for the use of the Hospital, vis.: twelve Half Hogsheads, a Gathering Tub, a square Cooler, Thralls, Wooden Spout, a Vat to mash, Strikes, buckets, Brewing Sieve, Tubs, a Tun dish, three brass Cocks, provided the above articles are such as are good and will suit to a copper that boils one hundred gallons.

Battered remnants of these stills can yet be found in many a modern English hospital.

As a concession to the popularity of alcoholic beverages, porter (alcoholic content, 4.20 per cent) and ale (6.87 per cent) were also kept in the hospitals for use by the nursing staff and certain patients. Nevertheless, gin was by far the people's choice in "merrie" eighteenth century England. Having an average alcoholic percentage of 51.6, it assured the populace of a quick and cheap stupor. By mid-century some 6,000,000 English (19) were drinking more than 11,000,000 gal. gin annually (20). This constituted an average consumption of almost 2 gal. for every man, woman, and child.

With gin in demand, the hospitals were hard put to keep it out of their premises. To further complicate matters, many patients could easily leave the hospital grounds and spend their evenings at local gin shops. New rules and regulations were continually passed in an attempt to combat this problem. A minute from the board meeting of St. George's in December 1740 stated (8), "If any person or persons whatever be detected selling gin or any other spiritous liquors to any servant or patient belonging to the house, they shall be prosecuted as the law directs at the expense of the board." Not until the end of the nineteenth century did this drinking cease to be an ever-present evil.

Coffee and tea found scant use except at the coffee houses and in rich homes. They were expensive at their respective costs of 3 halfpences a cup and 7 to 30 shillings a pound (13). There was also considerable suspicion that coffee and tea had a deleterious effect on the sick. As the century progressed, views changed, and many of the hospitals provided little copper kettles for hot water so that the patients might drink coffee and tea supplied by visitors.

Complaints by patients concerning the diets were common. These protests were usually met with a stony indifference by the administration, but occasionally the hospitals resorted to dietary restriction as a disciplinary measure. For instance, the governors of the Newcastle Infirmary in May of 1754 judged a complaint about the meat and beer to be unfounded. The guilty patients were severely reprimanded and ordered to have toast and water for a week (21). Such practices only helped to make a bad situation worse.

Ireland, but for a few exceptions, presented a far more pitiable picture in its hospital diets. Typical was the County Infirmary at Wicklow which as late as 1788 scantily provided its patients with a sixpenny loaf of bread (48 oz.) every four days and 3 pt. milk a day (11). Milk was customarily diluted with equal parts of water before serving. The County Infirmary at Castlebar represented a more magnanimous approach. In the late seventeen hundreds, its patients were receiving "water pottage and one pint of milk a day; besides one sheepshead boiled for soup for all patients, three days per week, and on three other days a pennyworth of bread (eight ounces) for each patient" (11).

Welsh hospitals did not appear until the nineteenth century, but even these late arrivals had dietaries as bad as the worst Irish examples of the eighteenth century.

GRADUAL IMPROVEMENT

The improvement of hospital diets was a gradual process intimately associated with the general development of scientific and social ideals throughout the eighteenth, nineteenth, and twentieth centuries. Impetus for the reform of diets rose out of the recognition that care of the sick remains ineffectual until nutrition be conducive to recovery rather than to poorer health. The acceptance of this concept created

[3] This reference is also used as a source for the other alcoholic percentages given in other parts of this paper.

the basis for dietary revision. However, it remained for the nineteenth century to develop a working philosophy of humanitarianism, in which man felt moralistic concern for his fellow man, before a true revision could be accomplished.

The modern English hospital as well as its American counterpart owes much to the improvement of nutritional standards. By the eradication of one of the great inadequacies which helped to negate the original purpose of its creation, this hospital is now able proudly and justly to claim itself as a place for the best possible care of the sick.

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Prehistoric Diets

Early food and drink habits were recently noted by Prof. Grahame Clarke in the second Albert Reckitt Archaeological Trust lecture before the British Academy. Reindeer was almost the entire source of North Germany's meat in the late glacial period, while the red deer served as the principal meat of east Yorkshire during the preboreal part of the postglacial period. Evidence from a necropsy on an early Iron Age man from a Jutland bog showed that he ate a gruel of barley, linseed, cameline seed, and the fruit of *Polygonum lapathifolum*. This resembles the Greek and Italian peasants' common diet described by Pliny.

In the beverage field, evidence from Danish funerals suggests that the drink of the Bronze Age was cranberry wine mixed with myrtle and honey. The Roman Iron Age's drink seems to have been a brew of barley, cranberry, and bog myrtle.—*From: Foreign Letters. J.A.M.A. 154: 357 (January 23), 1954.*

Dietary Surveys in Peru

III. Chacán and Vicos, Rural Communities in the Peruvian Andes[1]

CARLOS COLLAZOS CH., M.D., HILDA S. WHITE, Ph.D., RUTH L. HUENEMANN, D.Sc.,[2] EMMA REH,[3] PHILIP L. WHITE, Ph.D., AURORA CASTELLANOS, ROSA BENITES, YOLANDA BRAVO, ANGELICA LOO, IRMA MOSCOSO, CARMEN CACERES, and AIDA DIESELDORFF[4]

Department of Nutrition, Ministry of Public Health, Lima, Peru; Foreign Operations Administration, Institute of Inter-American Affairs, Division of Health, Welfare, and Housing, Lima, Peru; Food and Agriculture Organization of the United Nations; and Department of Nutrition, Harvard School of Public Health, Boston

IN 1951–1953, the Department of Nutrition, Ministry of Public Health, Lima, Peru, conducted dietary surveys in the Peruvian "sierra," the mountainous area of the country. The sierra is different geographically, socially, and economically from the coastal and jungle regions of the country where earlier surveys were made (1, 2).

The inhabitants of the sierra, representing about one-half of Peru's total population, are largely of the Indian race in contrast to the mestizo type (mixed Indian and Spanish blood) which predominates in other parts of the country. A great many Indians speak Quechua, a language closely related to that spoken by the Incas. This necessitated the use of interpreters.

This report describes surveys made in Chacán in December 1951 and June 1953 and in the Hacienda Vicos in July 1952 and February 1953. Chacán is a small farming town located in the southern part of the Peruvian Andes at an elevation of approximately 10,000 ft. above sea level. It is about 25 mi. from historic Cuzco, one-time capital of the Inca empire. The Hacienda Vicos is situated in the Callejon de Huaylas, a valley of the Cordillera Blanca, a range of the Andes Mountains in the northern part of Peru. The altitude of the hacienda ranges from 9,000 to 12,000 ft. above sea level.

The surveys in each place were made in different seasons. The rainy season in the sierra includes the months from November to May. There is little rainfall during the remainder of the year. Both communities are essentially agricultural, and the inhabitants depend on the land for their livelihood. Seasonal variation, through its effect on food production, was reflected in the dietary habits.

DESCRIPTION OF THE SIERRA COMMUNITIES

On November 30, 1951 an agreement was signed between Cornell University and the *Instituto Indigenista Peruano* to permit the initiation of the "*Proyecto Perú-Cornell*," a project designed to study the acculturation of the Peruvian Indian (3, 4). The Hacienda Vicos was selected as the site for this study, and it was leased for a five-year period beginning in November 1951. Members of the Cornell

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[2] Present Address: School of Public Health, University of California, Berkeley.

[3] Regional Nutrition Officer, Food and Agriculture Organization of the United Nations. Present Address: Food and Agriculture Organization of the United Nations, Rome, Italy.

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University staff have been in residence at the hacienda since that time and have been assisted by the *Instituto de Estudios Etnologicos del Museo de Historia Nacional* and the *Instituto de Etnologia de la Universidad de San Marcos*. At the request of the director of the Cornell project, the Department of Nutrition of the Peruvian government agreed to carry out dietary studies near the beginning of the socio-anthropologic experiment and to continue such surveys as indicated during the course of the Cornell tenure of the hacienda.

Approximately 380 families comprising 2250 persons live on the hacienda, which has a total area of approximately 28 sq. mi. An estimated 90 per cent of the arable land is apportioned among the families for their own use, while the remaining 10 per cent is planted in "cash crops" by the hacienda management. At least one member of each family to which the hacienda supplies land is required to work three days a week for the hacienda.

In Chacán, the people lived on and worked the land granted to their ancestors at the time of the Spanish conquest of Peru. The land has been passed down from parents to children and, since it could not be sold, the plots have become smaller and smaller. The 360 houses are scattered over an area of about 10 sq. mi. According to the census made prior to the first dietary survey (December 1951), Chacán had a population of 1518.

The living conditions are similar in the two communities. The houses are of adobe, with roofs of homemade red tile or straw. Houses have no windows and doorways are so low that one must stoop to enter. This type of construction helps to protect the people from the intense cold of the sierra nights. The only heat is supplied by the cooking fire in the kitchen which is often located in a separate small building. In both places, the kitchen serves for preparing and eating meals and often is utilized as a bedroom. Animal hides or hand-woven blankets placed on the earthen floor are the only "beds" available to many of the people. In both communities, almost all of the families have domestic animals, dogs, sheep, pigs, and guinea pigs. There are no sanitary facilities, and water is obtained from nearby irrigation ditches, springs, or small ponds.

The women help the men in the fields and are largely responsible for pasturing the animals. While watching the animals and even while walking within the community, they are constantly spinning woolen yarns. Children begin to work at an early age, helping their parents in the fields or around the home.

The people of the Hacienda Vicos wear homemade woolen clothes. Men's costumes are characterized by a typical woolen "poncho," the women's costumes by brightly colored skirts and shawls. All wear hats even the youngest children. Sandals made from discarded automobile tires provide the most common type of footwear.

Sierra woman spinning yarn from crude wool

In Chacán, many men wear European-type clothing and a number of women wear Indian costume characterized by woolen shawls and skirts. Here also the people are never without hats.

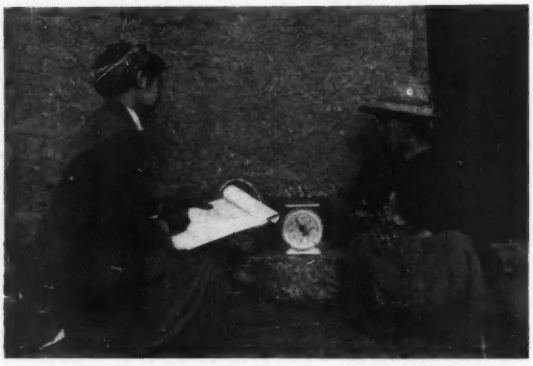
The illiteracy rate is high in both places. There are schools in both communities, but few of the children attend for long enough periods to learn to read and write or speak Spanish.

METHODS

For the first survey in Chacán (December 1951), the families were divided into groups according to their "economic status," based on land holdings, number of animals owned, and number of workers in each family. A proportionate number was chosen at random from each of the groups to give a sample including forty-three families. Thirty-nine of the original forty-three were included in the second survey (June 1953).

Forty families were included in the first Vicos

survey, and thirty-seven in the second. The families of the hacienda were stratified in accordance with their "economic status" prior to the selection of the sample. The stratification was made with the assistance of the administrative staff of the hacienda and was based on data obtained during a census made earlier by the staff.



Researcher weighs potatoes to be used in noon meal

The methods employed in the dietary surveys were essentially the same as those described previously (1). The Vicos surveys lasted for only four days; the monotony of the diet and the technical difficulties encountered in making the daily visits to the families caused the time to be shortened from the usual seven-day period. Total food consumption was interpreted in terms of nutrient intake employing the tables of food composition prepared by the Department of Nutrition (5). Recommended allowances for the nutrients were taken from tables prepared by the Instituto de Nutrición de Centro America y Panamá (6). These tables were expanded to include caloric allowances for persons living at an average annual temperature of 10°C. (50°F.). Allowances for the "reference man and woman" were selected, since it was impossible to conduct individual activity studies.

The average weights and heights of the adult men and women of Chacán participating in the survey (55 kg., 62.5 in. and 50 kg., 58.4 in., respectively) were employed in assigning allowances for the few adults for whom weights and heights were not obtained. These weights were used for all adults of Vicos, since it was impossible to obtain individual values. At the time of the second survey at Vicos, a group of thirty-two men working near the hacienda headquarters (not necessarily members of survey families) were weighed. The average weight was 56.9 kg.

FAMILY COMPOSITION

The two surveys in Chacán, 43 and 39 families, included 170 and 179 persons, respectively; the average family had 4.0 and 4.6 members. The 40 and 37 families of the Vicos surveys were made up of 211 and 196 persons, with an average of 5.3 persons per household.

Data from the 1951 Chacán census showed that 76 per cent of the population was less than 35 years old, and 57 per cent, less than 25 years of age. Approximately 14 per cent of the population was more than 50 years old. Similar data for the entire Vicos population were not available. However, 70 per cent of the members of survey families was less than 31 years old and 57 per cent less than 21. Only 10 per cent of the family members was more than 50 years of age.

FOOD CONSUMPTION AND MEAL PATTERNS

In Table 1 the foods eaten by 25 per cent or more of subjects of the four surveys are listed. To show the relative importance of these foods, the average daily consumption per family is included. The most striking difference between this and similar tables for coastal and jungle populations (1, 2) was the small number of items. The weekly dietary record for a coastal family included forty or fifty different foods, while it was not uncommon to find ten or fewer foods listed in the record of a sierra family. Seasonal variation was more evident in the sierra than in the coast or in the jungle. In Vicos, there was a high consumption of *ocas* (*Oxalis tuberosa mol*, a small tuber) during the first survey and a complete absence of this food during the second. Similar differences were noted in Chacán in the use of *ollucos* (*Ollucus tuberosus*, a small tuber) and of turnip greens.

In only one of the four surveys, the second in Chacán, was a food of animal origin included in 25 per cent or more of the family menus. Forty-one per cent of the families in this survey consumed meat in some form during the week. Twelve children of eleven families were receiving reconstituted powdered milk.[5] Records of pork, beef, mutton, tripe, pork skin, pigs' feet, organ meats, and guinea pig were noted. A few families consumed small quantities of cheese, fresh milk, or eggs. Although most of the families owned domestic animals, the eggs, milk, and meat were sold to provide one of the few sources of income with which to buy clothing, household necessities, and foods not produced at home.

Thus the sierra diets were largely vegetarian. In both survey sites, the staples were cereals, broad beans, potatoes, and other tubers (*oca*, *olluco*). Corn was the food which appeared with most frequency in all surveys. Wheat and barley were also

[5] The milk was provided by the Ministry of Public Health with the cooperation of UNICEF (United Nations International Children's Fund) and was prepared and distributed in the school. Records of the amount received by each child were obtained with the help of the school authorities, and these values were included in the family dietary records.

TABLE 1

Foods consumed by 25 per cent or more of the families in one or more of the Sierra surveys

FOOD	CHACÁN				VICOS			
	First survey December 1951		Second survey June 1953		First survey July 1952		Second survey February 1953	
	Families consuming	Average consumption	Families consuming	Average consumption	Families consuming	Average consumption	Families consuming	Average consumption
	%*	gm./day†	%*	gm./day†	%*	gm./day†	%*	gm./day†
Barley	86	215	33	105	68	390	22	160
Corn, dry	100	800	100	1200	100	980	97	600
Quinua	18	90	38	100	5	65	0	0
Wheat	84	230	49	125	85	420	97	700
Broad beans, dry	42	250	64	230	73	490	49	250
Bread	33	35	10	10	3	130	8	120
Potatoes	93	390	100	1230	5	775	100	2900
Chuño	33	75	23	180	0	0	0	0
Ocas (tuber)	0	0	23	290	78	1600	0	0
Ollucos (tuber)	0	0	90	630	18	640	3	60
Onions (with stems)	91	90	92	30	70	20	95	35
Rocoto (pepper)	70	10	92	10	48	15	57	30
Cabbage	2	225	23	110	28	40	27	90
Turnip greens	98	350	0	0	0	0	0	0
Herbs (various)	91	10	72	5	35	5	97	25
Sugar	53	55	67	60	38	100	40	115
Lard	19	20	18	2	93	25	97	25
Powdered milk	0	0	31	20	0	0	0	0
All meats	16	120	41	100	23	345	19	90

* 43, 39, 40, and 37 families were included in Chacán, first and second, and in Vicos, first and second surveys, respectively.

† Averages calculated considering only families using each item; weights are those for edible portions.

consumed by a large proportion of the families in average amounts varying from 100 to 700 gm. per day per family. *Quinua* (*Chenopodium quinoa*), included in Table 1, is a small grained seed product of the sierra. Preliminary studies have shown that the *quinua* protein has a high nutritive value (7, 8).

The potato harvest had just been completed at the time of the second Chacán survey, and 100 per cent of the families ate an average of 1230 gm. per day. The only potatoes available at the time of the first survey were those stored from the previous harvest six months earlier. During the first Vicos survey, 65 per cent of the families consumed an average of 775 gm. potatoes per day. During the second study, all of the families consumed an average of 2900 gm. per day. The potatoes in both survey sites were small (about the size of a golf ball). *Chuño*, included in the Chacán lists (Table 1), is a desiccated potato product, prepared by freezing and drying, which is used either whole or as a flour. In addition to potatoes, other tubers, such as *ocas* and *ollucos*, were consumed in large amounts.

Dried broad beans were included in the dietary records of 42 to 73 per cent of the sierra families in average amounts varying from 230 to 490 gm. per family per day. They were toasted, cooked with corn, or ground into a flour. Vegetables and fruits occupied minor places in the diets. Onions (used with stalks), *rocoto* (a small hot pepper), and a variety of herbs were frequently employed as condiments. The first Chacán survey presented an interesting contrast. During the week of the survey, 98 per cent of the families consumed an average of 350 gm. wild turnip greens per day. As will be shown later, the inclusion of this food caused marked differences in the calculated nutritive value of these diets as compared with those of the second Chacán study and of the Vicos surveys. Sugar and lard consumption was much less than among the jungle and coastal populations studied (1, 2).

In general, the sierra families had only two meals a day. "Breakfast" was prepared and eaten between 7 and 10 a.m.; supper, between 5 and 6 p.m. Occasionally an earlier breakfast of coffee or an herb tea was prepared at 5 to 6 a.m. The two principal meals were much the same and almost always included a soup and a second plate. Soups were made with a base of cereal or broad bean flour, to which potatoes, *ocas*, *ollucos*, or—as in the case of the first Chacán survey—turnip greens were added. The tubers were also served separately, seasoned with hot pepper or onions.

Toasted corn or broad beans were carried by men working away from the home and were eaten during rest hours. In Chacán most families each day prepared a kettle of *mote*, a corn dish similar to whole hominy. Broad beans were often cooked with the corn in making *mote*.

NUTRIENT INTAKES COMPARED WITH RECOMMENDATIONS

The nutritive value of the family diets and the recommended nutrient allowances for each family were calculated as described in a previous publication (1) and as described above (see Methods). Nutrient intakes were expressed as percentages of recommended allowances. For each of the nutrients, those families consuming less than 75 per cent of the recommended amount were classified as "poor"; those consuming between 75 and 100 per cent, as "fair"; and those consuming more than 100 per cent, as "good." The division is arbitrary but is in keeping with procedure followed in the interpretation of the findings of previous surveys (1, 2).

Figure 1 shows in graphic form the percentages of the families studied in each of the four surveys classified as "poor" and "fair" with respect to each of the nutrients. During three of the four surveys, almost 100 per cent of the families were classified as "poor" with respect to intakes of calcium and vitamin A. The more adequate intakes of these two nutrients during the first Chacán survey were accounted for by the high consumption of the calcium- and carotene-rich turnip greens.

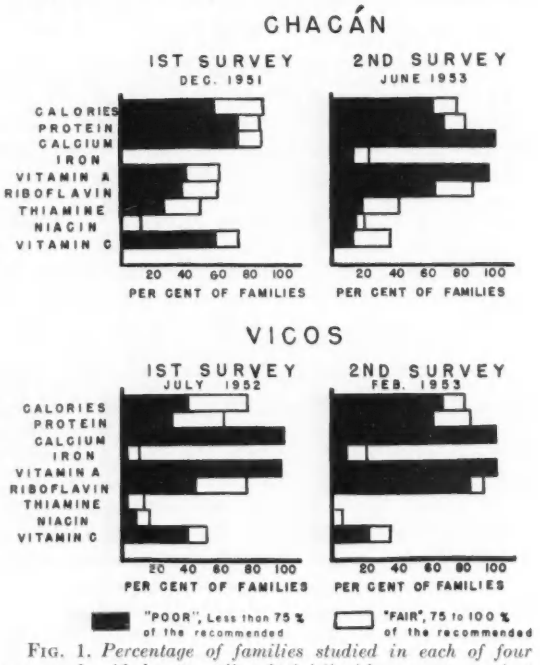


FIG. 1. *Percentage of families studied in each of four surveys classified as "poor" and "fair" with respect to nutrient intakes.*

With the exception of the first Vicos survey, 60 per cent or more of the families consumed less than 75 per cent of the recommended amounts of protein and calories. The percentage of total calories derived from carbohydrates, fats, and proteins was calculated for each family, and the average values are shown in Table 2. Almost 80 per cent of total calories were derived from carbohydrates, 5 to 8 per cent from fats, and 9 to 12 per cent from proteins. Thirty and 19 per cent of the families during the first and second Vicos surveys, respectively, included some type of animal protein. Similar values for the two Chacán studies were 19 and 72 per cent of the families. On the average, about 15 per cent of the total was animal protein.

From 37 to 84 per cent of the families had "poor" intakes of riboflavin and 60 per cent or more consumed less than 100 per cent of the recommended amounts. Turnip greens were responsible for superior intakes of this vitamin during the first Chacán survey.

Ascorbic acid consumption was variable; in both places, the second surveys showed marked improvement over the first. In Chacán, the improvement was accounted for by the availability of freshly harvested potatoes, while only old, desiccated potatoes devoid of ascorbic acid had been available during the first survey. The turnip greens, used in the first survey, did not provide amounts of ascorbic acid sufficient to meet the recommended allowances. Increased potato consumption during the second Vicos survey accounted for the improvement in ascorbic acid intake.

Values for niacin, thiamine, and iron were generally "good"; the high consumption of cereals accounted for the satisfactory intakes of these three nutrients. Vicos families in general had higher intakes than did those of Chacán. In the second Vicos survey, no family was classified as "poor" with respect to niacin or thiamine.

The total amounts consumed of those foods appearing in Table 1 were averaged in terms of daily consumption per person. The average or "typical" diets thus obtained are given in Tables 3 and 4. A

TABLE 2

Caloric distribution in each of the four surveys

FOODSTUFF	PER CENT OF TOTAL CALORIES			
	Chacán		Vicos	
	First survey	Second survey	First survey	Second survey
Carbohydrates	85.20 ± 3.60	83.32 ± 4.10	79.41 ± 5.44	83.37 ± 3.04
Proteins	9.46 ± 2.60	9.37 ± 1.84	12.12 ± 3.28	9.79 ± 1.54
Fats	5.42 ± 2.92	7.29 ± 2.97	8.48 ± 3.60	6.82 ± 2.61

few items, such as the herbs and *rocoto*, averaged less than 5 gm. per day per person and were not included. The powdered milk of the second Chacán survey was also omitted from the "typical" diet since its distribution was among a few individual family members. The nutritive value of these "typical" diets represents the average daily nutrient intakes per person. For comparison, the average daily recommended nutrient intakes have been included in these tables.

The total food available, even if proportionately distributed, was insufficient to meet the caloric and protein needs of the people. All average intakes were 76 per cent or less of the average recommendations. Cereals and broad beans were the largest contributors of protein and calories, although in the second Vicos survey, potatoes supplied 38 per cent of the calories and 31 per cent of the total protein. No one source of animal protein appears in any of the "typical" diets. Not only was the total protein intake low, but also the largest proportion of that which was consumed was of low quality. The nutritive value of the proteins supplied by the mixed vegetable diets typical of the sierra are now under study.

The available foods were able to supply the needs for iron, niacin, and thiamine. The average intakes in all cases were greater than 100 per cent of the average recommended amounts. Except for the turnip greens of the first Chacán survey, foods rich in calcium, riboflavin, and carotene or vitamin A were not encountered or, as in the case of herbs, were consumed in very small quantities. In each survey there was one single food which contributed almost all of the ascorbic acid—turnip greens, in the first Chacán survey, and potatoes or *ocas* in the other studies. Except for the first Chacán study, average intakes were greater than 100 per cent of recommendations, suggesting that a proportionate distribution of the ascorbic acid-contributing foods could in most cases have met the needs.

Since all calculations were based on the nutrient content of fresh foods and no allowances for cooking losses were made, the actual nutrient intakes were lower than calculations. The difference between the two values might be particularly marked for ascorbic acid, since this nutrient was derived entirely from foods subjected to cooking. However, the tubers, which were the principal sources of ascorbic acid, were prepared in a way that should

TABLE 3

Nutritive value of the "typical" Chacán diets

FOOD	AVERAGE DAILY INTAKE PER PERSON	CALORIES	PROTEIN	CALCIUM	IRON	VITAMIN A*	THIAMINE	RIBOFLAVIN	NIACIN	ASCORBIC ACID
First Survey—December 1951										
	gm.		*gm.*	*mg.*	*mg.*	*I.U.*	*mg.*	*mg.*	*mg.*	*mg.*
Barley	50	171	3.7	30	2.7	—	0.17	0.10	3.70	—
Corn, dry	200	612	12.2	8	4.4	—	0.96	0.40	5.40	—
Wheat	50	164	4.6	18	2.3	—	0.15	0.04	1.43	—
Broad beans, dry	25	81	6.5	15	1.6	—	0.11	0.09	0.58	—
Potatoes	80	88	1.5	17	2.1	—	0.06	0.07	1.68	—
Turnip greens	90	32	2.6	330	2.5	3200	0.10	0.33	2.16	42
Onions (with stems)	20	6	0.2	8	1.0	65	0.01	0.02	0.04	1
Sugar	10	40	—	—	—	—	—	—	—	—
Average intake		1194	31.3	426	16.6	3265	1.56	1.05	14.99	43
Average recommended intake		2060	55.0	940	9.9	3760	1.03	1.37	10.30	59
Per cent recommended intake		58	57	45	168	87	151	77	145	73
Second Survey—June 1953										
Barley	10	34	0.7	6	0.5	—	0.03	0.02	0.73	—
Corn, dry	260	795	15.9	10	5.7	—	1.25	0.52	7.00	—
Quinua	10	35	1.1	14	0,7	—	0.03	0.02	0.16	—
Wheat	15	49	1.4	5	0.7	—	0.04	0.01	0.43	—
Broad beans, dry	35	113	9.1	21	2.2	—	0.15	0.13	0.81	—
Potatoes	265	265	5.6	16	1.6	—	0.19	0.21	5.00	54
Ollucos (tubers)	120	72	1.0	2	1.2	—	0.02	0.01	0.18	14
Onions (with stems)	5	1	—	2	0.2	17	—	—	0.01	—
Sugar	10	40	—	—	—	—	—	—	—	—
Average intake		1404	34.8	76	12.8	17	1.71	0.92	14.32	68
Average recommended intake		2080	54.6	975	10.0	3785	1.03	1.42	10.40	61
Per cent recommended intake		68	64	8	128	0.4	166	65	138	111

*1 mg. carotene = 1670 I.U. vitamin A.

not cause excessive destruction of this vitamin. Much of the food was undercooked, the potatoes raw in the center.

The turnip greens of the first Chacán survey were cut up and boiled with a minimum of water, pressed into balls, and added to soups. The cooking water was seldom used. Although cooking time was short, there were undoubtedly nutrient losses. The oxalate content of turnip greens is low (9), suggesting that the calcium was available. The conversion factor of 1670 I.U. vitamin A per milligram carotene (10) may not be applicable in calculating the "vitamin A" content of diets, when carotene is derived almost entirely from a single food.

There were a number of factors, difficult to evaluate quantitatively, which might have influenced either needs or intakes of certain nutrients. In Vicos, corn—a principal source of the B vitamins—was soaked in water containing ashes to soften the outer shell. After soaking, it was thoroughly washed prior to further treatment. The nutrient or mineral destruction caused by such procedure has not been completely studied. Also in Vicos, the data did not include the probable contribution which chewing coca leaves made to the diet. Men and boys who chewed coca leaves always mixed powdered *cal*, a calcium-containing mineral, with the dried leaves (11). This practice may have contributed to calcium intake. Preliminary analyses (5) indicate that the leaves contain considerable carotene and riboflavin. It is difficult, however, to obtain quantitative information with regard to the amount used, and the utilization of nutrients contained in coca leaves is not known.

In accordance with the recommendations of the Food and Agriculture Organization of the United Nations (12), caloric contributions from alcoholic beverages have not been computed, although alcohol undoubtedly contributed to the caloric intake. It was difficult to estimate accurately its consumption or its distribution among family members. Data obtained for 47 per cent of the families during the second Chacán survey gave an average intake per day per family of 1500 ml. *chica de jora*, a fermented corn drink with an alcohol content as high as 10 per cent. An analysis of twelve samples gave an average of 4.6 per cent alcohol with variations from 0 to 10.6 per cent (13). The Vicos population was also known to consume *chica de jora*.

A study on the Hacienda Vicos showed that 80 per cent of 200 subjects were infected with *Ascaris lumbricoides* (14). Other intestinal parasites were

TABLE 4

Nutritive value of the "typical" Vicos diets

FOOD	AVERAGE DAILY INTAKE PER PERSON	CALORIES	PROTEIN	CALCIUM	IRON	VITAMIN A*	THIAMINE	RIBOFLAVIN	NIACIN	ASCORBIC ACID
				First Survey—July 1952						
	gm.		*gm.*	*mg.*	*mg.*	*I.U.*	*mg.*	*mg.*	*mg.*	*mg.*
Barley	50	171	3.7	30	2.7	—	0.17	0.10	3.70	—
Corn, dry	190	582	11.6	8	4.2	—	0.91	0.38	5.14	—
Wheat	70	230	6.4	25	3.2	—	0.21	0.06	1.99	—
Broad beans, dry	70	227	18.1	41	4.5	—	0.30	0.26	1.61	—
Oca (tuber)	235	134	2.6	5	2.3	84	0.05	0.07	1.01	57.5
Potatoes	100	100	2.0	10	0.4	—	0.17	0.05	1.77	13.1
Sugar	5	20	—	—	—	—	—	—	—	—
Lard	5	45	—	—	—	—	—	—	—	—
Average intake		1509	44.4	125	17.3	84	1.81	0.92	15.22	70.6
Average recommended intake		2150	58.0	1000	10.1	3860	1.10	1.40	11.00	62.0
Per cent recommended intake		70	76	13	171	3	165	66	138	117
				Second Survey—February 1953						
Corn, dry	115	352	7.0	5	2.5	—	0.55	0.23	3.10	—
Wheat	130	426	12.0	47	6.0	—	0.39	0.10	3.70	—
Broad beans, dry	20	65	5.2	12	1.3	—	0.09	0.07	0.46	—
Potatoes	550	550	11.0	56	2.2	—	0.94	0.27	9.75	72.0
Cabbage	5	3	0.2	16	0.1	50	0.01	0.02	0.08	4.9
Sugar	10	40	—	—	—	—	—	—	—	—
Lard	5	45	—	—	—	—	—	—	—	—
Average intake		1481	35.4	138	12.1	50	1.98	0.69	17.09	76.9
Average recommended intake		2155	59.0	1000	10.2	3890	1.10	1.50	11.00	65.0
Per cent recommended intake		69	60	14	120	2	180	46	156	120

* 1 mg. carotene = 1670 I.U. vitamin A.

encountered less frequently. It is probable that the inhabitants of Chacán, living under similar conditions, would also show a high incidence of parasitism. The nutrient needs of people with parasites are not known, but if, as a result of parasitism, there were blood loss, diarrhea, or faulty absorption, needs would be elevated.

PHYSICAL STATUS

During the first surveys in each site, children three years of age or less, who were members of survey families, were given physical examinations. A detailed summary of the findings will be published later (15). The thirteen children of Chacán and the fifteen children of Vicos all had clinical signs which were possibly but not necessarily related to nutritional deficiencies. Approximately 30 per cent of the children measured less, both in height and weight, than the lowest percentiles of Stuart (16). About half had a mild xerosis of the skin, and many showed modifications of the tongue, lips, and the line of implantation of the ear—signs sometimes associated with deficiencies of riboflavin or other B vitamins. An eye pigmentation in many of the children may have been related to a vitamin A deficiency.

In Vicos, the possibility of a progressive vitamin A deficiency was suggested by the fact that all of the adolescents (fifteen subjects, twelve to sixteen years of age) who were examined had a similar pigmentation of the eye, accompanied by a thickening of the bulbar conjunctiva. All of these subjects showed a slight xerosis of the skin and about half exhibited changes of the lips and tongue possibly related to a riboflavin or B-vitamin deficiency. Forty-seven per cent had dental caries. The personal hygiene of all fifteen was classified as bad.

Sixty-seven per cent had poor muscular development and more than half, a subnormal accumulation of subcutaneous tissue. The poor body development was probably a reflection of inadequate intake of protein and calories.

Plasma concentrations of protein, calcium, phosphorus, and alkaline phosphatase for the fifteen adolescents were within the normal limits for this age group (17). Average hemoglobin was 14.5 gm. per 100 ml. and the average hematocrit, 47 per cent. Normal values for this age group living at high altitudes are not available for comparative purposes, but these values may be low (18, 19).

Although there were no advanced signs of nutritional deficiencies among the groups examined, there were signs suggestive of inadequate intakes of vitamin A; the B-complex vitamins, particularly riboflavin; protein; and calories. The studies demonstrated generally low intakes of these nutrients.

DISCUSSION

In planning ways for improving the diets of the sierra populations, socio-economic factors must be given careful consideration. The poverty of the people and their relative isolation from market centers present difficulties which cannot be easily overcome. The nutritional problems of the sierra are, therefore, problems of production and supply influenced markedly by social and economic factors.

Corn is ground on a rocker-type stone pestle. This man is wearing a poncho and cap (*chullo*) typical of sierra costumes.

Since the people depend on the land for the bulk of their food, the most logical approach to dietary improvement might appear to be through changes and improvements in farming methods. However, the Indians are far from receptive to drastic changes in their way of life. Introduction of more efficient methods of farming would of necessity be a slow process and would require carefully planned educational programs.

While most of the families own domestic animals, the products are at present sold and represent one of the few sources of income. It would seem advisable to encourage an increase in the number of domestic animals and to encourage more home use of animal foods. The administration of Hacienda Vicos has proposed the introduction of rabbits as a domestic animal.

Cereal and bean production should be maintained at as high a level as is compatible with the land available and with the growing seasons. It would probably be advantageous to sacrifice corn production in favor of cereals, such as wheat, oats, and *quinua*, a high altitude seed product, which are richer in protein and the B-vitamins.

During certain seasons, green and yellow vegetables can be grown in the sierra. Although most of these products have low prestige value, educational programs should attempt to convince the people of their value and to demonstrate ways for using them.

SUMMARY

Two dietary surveys were conducted in each of two agricultural communities in the Peruvian Andes.

The standard of living in both places was low. Staples of the diets were cereals, tubers, and broad beans. Foods of animal origin were consumed in small amounts and infrequently. In three of the four surveys, almost 100 per cent of the families consumed less than 75 per cent of the recommended amounts of calcium and vitamin A, and 50 per cent or more of the families had less than 75 per cent the recommendations for protein and calories. Forty to 80 per cent of the families in all four surveys were in this category with respect to riboflavin intake and 10 to 60 per cent with respect to ascorbic acid. Iron, thiamine, and niacin intakes were satisfactory with a large proportion of the families consuming more than 100 per cent of the recommended amounts.

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Detrimental Factor in Sweet Pea Seeds

Biochemists from the University of Wisconsin have identified the substance from common sweet pea seeds that causes a deforming disease in human beings and domestic animals consuming these seeds for food. The disease, known as lathyrism, has been recognized since the time of Hippocrates, but the causative agent has never before been isolated.

The feat was accomplished by Professor Frank M. Strong and E. D. Schilling. Mr. Schilling has also succeeded in synthesizing the material. Wisconsin scientists are now attempting to devise an anti-metabolite or biologic antagonist for the lathyrism factor which would act as an antidote.

The disease causes marked and wide spread malformation in bones of animals and man. Bones are made soft and weak because the toxic substance seems to prevent proper functioning of the connective tissue where calcium is laid down. Men and livestock in India, North Africa, and much of the Mediterranean region use the common flowering sweet pea as food in emergencies and have long been subject to the disease. Recently, two other kinds of sweet pea, known as the Singletary and Caley, were introduced into the Gulf states of the United States for winter cover crops. These will also cause lathyrism. Horses are more subject to the disease than pigs or cattle.

If an anti-metabolite can be produced, there is some evidence that such a chemical might have considerable value in some of the other human disease of bones, joints, and connective tissue.

Children with and without Rheumatic Fever

III. Blood Serum Vitamins and Phosphatase Data[1]

ETHELWYN B. WILCOX, Ph.D., LEORA S. GALLOWAY,[2] PATRICIA WOOD,[3] and FARRIN L. MANGELSON[4,5]

Department of Foods and Nutrition, Utah State Agricultural College, Logan; and Human Nutrition Research Branch, U. S. Department of Agriculture

AS PART of a study of the nutritional status of a group of children with a history of rheumatic fever and a control group without such a history, blood serum vitamin A, carotene, ascorbic acid, riboflavin, phosphatase, and cholesterol determinations were made. Pertinent data on the children studied and evaluation of the nutrient intakes and food habits have been reported (1, 2). In this paper, the findings on six constituents of the blood serum are reported, as well as correlations between results obtained on the serum and the dietary findings. Results on eight other constituents of the whole blood or blood serum will be published later.

EXPERIMENTAL PROCEDURE

The 131 children, ranging in age from five to nineteen years, who comprised the rheumatic fever group were from the Ogden, Utah, Rheumatic Fever Clinic and were paired as to age, sex, and economic status with children who did not have a history of rheumatic fever (control group) from the same area. Four children of the rheumatic fever group had been apparently active cases within six months before the study. In the other children, the disease had been active prior to that time.

The children came to the clinic without breakfast where they had medical and dental examinations, and blood samples were taken for analyses. The blood was taken from a vein in the arm.

The serum vitamin A, carotene, ascorbic acid, riboflavin, and phosphatase were determined by the microchemical methods of Bessey and his co-workers (3). The serum ascorbic acid determinations were made immediately. Serum for the phosphatase determinations was frozen and analyzed within 48 hr. Serum for the vitamin A, carotene, riboflavin, and cholesterol analyses was frozen and analyzed within a month. Cholesterol was determined by the method of Sperry and Webb (4).

RESULTS AND DISCUSSION

The distribution, with mean and standard error, of six constituents of blood serum is presented in Table 1. A statistical comparison based on paired values was made of the findings for the rheumatic fever and non-rheumatic groups by age and sex. The differences between the values for the two groups of children were highly significant in favor of the rheumatic fever group for the following constituents: girls, 5 to 9 and 5 to 18 years old—for ascorbic acid; girls, 13 to 18 and 5 to 18 years old—for serum carotene; boys, 13 to 19 and 5 to 19 years old—for free serum riboflavin; boys, 5 to 9 and 5 to 19 years old—for total serum riboflavin and serum phosphatase. The control girls, 5 to 18 years old, had significantly more free serum riboflavin than those in the rheumatic fever group. Other differences were not significant.

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[2] Assigned to Utah State Agricultural College.

[3] Assigned to Utah State Agricultural College. Present address: New Mexico College of Agriculture and Mechanic Arts, State College.

[4] Present address: Snow College, Ephraim, Utah.

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TABLE 1

Distribution of children according to levels of blood serum constituents by age group

LEVEL OF BLOOD SERUM CONSTITUENT	5–9 YEARS				10–12 YEARS				13–19 YEARS			
	Rheumatic fever group		Control group		Rheumatic fever group		Control group		Rheumatic fever group		Control group	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Serum Vitamin A												
mcg./100 ml.												
Under 20	1		1	1		2		2	1	1	2	2
20–24	3	2	5	1	1	1	1	1	2	4	1	4
25–29	4	4	5	2	3	2	5	3	4	7	3	8
30–34	3	5	2	8	4	2	4	3	7	7	9	6
35–39	5	3	3	1	1	6	1	4	6	8	6	9
40–44	3	4	4	1	5		1	2	4	4	5	2
45–49	1					2	1	1	2			2
50–54						1	2			1	1	1
55 and over					1				1	2		
Total	20	18	20	15	15	16	15	16	27	34	27	34
Percentage below 20 mcg	5	0	5	7	0	13	0	13	4	3	7	6
Percentage below 30 mcg	40	33	55	33	26	31	40	38	26	35	22	41
Mean (mcg.)	32	33	31	30	35	34	35	32	35	34	34	33
Standard error of mean	2.0	1.7	1.8	1.1	1.9	2.7	2.5	2.1	1.9	1.6	1.5	1.5
Serum Carotene												
mcg./100 ml.												
Under 80				1			1	1	3		1	4
80–99		1		1		1		1	4	6	3	6
100–119	1	1	3	2	2	1	2	2	3	4	6	6
120–139	4	2	2	2	1	4			4	7	4	3
140–159	5	1	4	1	4	2	2	4	5	2	3	9
160–179	2	1	3	1	4	3		4	1	2	4	3
180–199	1	1	3	1	1	1	7	1	3	3	1	1
200–219			3	1		1	1	1		6	2	
220–239	3	4		2				1	1	2	2	2
240–259		3				1	2		1	1		
260–279	2			1	2	1			1			
280–299	1	1	2	1		1					1	
300 and over	1	3	1	1	1			1	1	1		
Total	20	18	21	15	15	16	15	16	27	34	27	34
Percentage below 75 mcg	0	0	0	7	0	0	7	6	11	0	0	9
Percentage below 125 mcg	10	11	19	33	13	12	20	31	44	35	44	5
Mean (mcg.)	193	217	180	178	187	170	171	158	145	157	147	129
Standard error of mean	16	17	14	20	32	14	15	16	13	11	10	7
Serum Ascorbic Acid												
mg./100 ml.												
0.2–0.3								1	4	1	1	2
0.4–0.5	1					1		2	4	2	2	1
0.6–0.7		1	1	2			1	2	2	2	4	4
0.8–0.9	1		1	3			4	1	2	4	7	9
1.0–1.1	3	1	4	2	3	3	3	1	3	9	2	7
1.2–1.3	8	4	4	4	4	4		5	4	4	6	6
1.4–1.5	2	4	3	2	4	3	5	2	4	6	4	1
1.6–1.7	3	5	3	4	3	3	2	2	2	4	1	4
1.8–1.9	2	2	4		1	1			2	3		
2.0 and over	1	1	1			1						1
Total	21	18	21	17	15	16	15	16	27	35	27	35
Percentage below 0.4 mg.	0	0	0	0	0	0	0	6	15	3	4	6
Percentage below 0.6 mg.	5	0	0	0	0	6	0	19	30	9	11	9
Mean (mg.)	1.4	1.5	1.5	1.3	1.4	1.4	1.2	1.1	1.0	1.2	1.0	1.1
Standard error of mean	0.09	0.08	0.09	0.08	0.06	0.09	0.08	0.11	0.10	0.06	0.07	0.07
Free Serum Riboflavin												
mcg./100 ml.												
Under 0.2	1		1						2	2	2	1
0.2–0.3	3	3	4	3	1		1	3	3	6	6	2
0.4–0.5	2	2	7	2	4	6	3	2	4	6	8	8
0.6–0.7	2	1	3	4	6	2	3	4	3	5	7	9
0.8–0.9	3	6	5		2	6	6	2	4	5	2	9
1.0–1.1	3	3	1	3	1		1		4	5	1	
1.2–1.3	6	1		2	1		1	1	2	2	1	3
1.4–1.5		2				1		1	1	1		1
1.6 and over	1			3		1		4	2	2		2

TABLE 1 (*Concluded*)

LEVEL OF BLOOD SERUM CONSTITUENT	5–9 YEARS				10–12 YEARS				13–19 YEARS			
	Rheumatic fever group		Control group		Rheumatic fever group		Control group		Rheumatic fever group		Control group	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Free Serum Riboflavin (*Continued*)												
Total	21	18	21	17	15	16	15	15	27	34	27	35
Percentage below 0.4 mcg.	19	17	24	18	7	0	7	7	18	24	30	8
Percentage below 0.6 mcg.	29	28	57	29	33	38	27	27	33	41	59	31
Mean (mcg.)	1.05	0.86	0.61	0.85	0.68	0.92	0.77	1.36	0.80	0.79	0.54	1.00
Standard error of mean	0.22	0.09	0.05	0.13	0.06	0.18	0.06	0.28	0.08	0.09	0.05	0.24
Total Serum Riboflavin												
mcg./100 ml.												
Under 1.5				2		2	1		4	1	1	2
1.5–1.6			1	1				2	1	8	1	4
1.7–1.8		2	1	1					2	3	2	4
1.9–2.0	2	1	4		4	2	4	2	2	6	5	6
2.1–2.2	1	1	3		3	2	2	2	1	3	5	3
2.3–2.4	3	3	3	1	2	2	4	1	3	3	4	6
2.5–2.6	2	2	2		1	1	1	3	4	1	6	2
2.7–2.8		2	4	6	3	4		1	3		2	2
2.9–3.0	5	2	3	3	2		2		2	1	1	3
3.1–3.2	2	2		1		1	1		1	3		2
3.3–3.4	1	1				1			2	1		
3.5–3.6	2	2		1				2	1	1		
3.7 and over	3			1		1		2	1	3		1
Total	21	18	21	17	15	16	15	15	27	34	27	35
Percentage below 1.9 mcg.	0	11	10	24	0	13	7	13	26	35	15	28
Percentage below 2.3 mcg.	14	22	43	18	47	38	47	40	37	62	52	54
Mean (mcg.)	3.1	2.7	2.4	2.6	2.4	2.6	2.4	2.8	2.4	2.3	2.3	2.4
Standard error of mean	0.22	0.12	0.08	0.20	0.09	0.22	0.12	0.33	0.15	0.13	0.08	0.24
Serum Phosphatase												
nitrophenol units/100 ml.												
Under 2.0					1		1			8	4	10
2.0–2.9	1	2	5	3	4	2	2	4	1	3	3	8
3.0–3.9	4	3	3	4	1	1	4	2	3	7	4	4
4.0–4.9	1	1	3	1	2	4			2		1	3
5.0–5.9	4	1	1	1	1	2	2	4		1	4	
6.0–6.9	2	1		1		2			2	1	2	
7.0–7.9						1			2		3	
8.0 and over	1	1	1					1	1		1	
Total	13	9	13	10	9	12	9	11	11	20	22	25
Percentage above 8 units	8	1	8	0	0	0	0	9	9	0	4	1
Mean	4.8	4.4	3.9	3.6	3.4	4.7	3.5	4.6	5.4	2.6	4.4	2.5
Standard error of mean	0.48	0.65	0.45	0.43	0.47	0.45	0.41	0.84	0.66	0.34	0.48	0.23
Total Serum Cholesterol												
mg./100 ml.												
Under 120		1	2						2		1	2
120–129	2					2	1		3	1	1	3
130–139	1		4	2	1	1	2	1	4	4	5	2
140–149	3	2	2	2					1	5	6	7
150–159		5		2	5		1	4	6	5	2	6
160–169	2	1	6		2	2	1	3	1	4	4	2
170–179	2		2	5	2	3	4	1	5	1	3	3
180–189	5	2	1		3	2	1	3	1	2	3	3
190–199	5	3	2	2	2		2	1	2	3	2	3
200–209		1				1	1	2	2	5		3
210–219		1	1	1		1	1			1		
220–229		2				3				2		1
230 and over				1		1	1	1		1		
Total	20	18	20	15	15	16	15	16	27	34	27	35
Percentage above 180 mg.	50	50	20	20	33	50	40	44	18	41	18	28
Percentage above 200 mg.	0	22	5	13	0	38	20	19	7	26	0	11
Mean (mg.)	169	176	159	175	167	183	176	176	157	172	154	162
Standard error of mean	5.5	7.8	6.1	9.2	4.4	9.0	7.8	6.3	5.3	5.3	4.3	4.7

An evaluation of the dietary intakes (1) of the two groups showed no significant differences in vitamin A, ascorbic acid, and riboflavin intakes. However, more children in the rheumatic fever group took vitamin supplements than in the non-rheumatic group. While 32 vs. 20 per cent took them part of the

time, only 14 vs. 4 per cent were taking them the week of the dietary survey.

Vitamin A and Carotene

No striking age or sex difference was shown in the serum vitamin A values, although the younger children had slightly lower mean values. The mean values of 30 to 35 mcg. per 100 ml. are close to the plasma vitamin A median of 35 mcg. per 100 ml. reported by Szymanski and Longwell (5) for children six to sixteen years of age. Other workers (6–8) have reported similar mean values and distribution of subjects for the same age and sex, with the exception that they had more subjects with values above 50 mcg. It should be noted, however, that Szymanski and Longwell (5) found some correlation between daily intake of vitamin A concentrate and plasma level. Only a few (7 per cent) had values over 50 mcg. per 100 ml. unless their diets were supplemented with vitamin A concentrate. The children in the Michigan study (6) were given supplements routinely. The use of supplements in the other studies (7, 8) was not reported. In the present study, 5 and 3 per cent of the rheumatic fever and control children, respectively, had serum values above 50 mcg. while 13 and 5 per cent in the two groups were taking vitamin A concentrate.

As shown in Table 1, a comparison of the serum vitamin A values has been made with 30 and 20 mcg. per 100 ml., since Clayton *et al.* (7) stated that the first of these values is considered to be the lower limit of normal and Bessey and Lowry (9) considered 20 mcg. as a critical level between poor and fair. Thirty per cent or more of the following groups had vitamin A values below 30 mcg.: boys in the rheumatic fever group, ages 5 to 9; boys in the non-rheumatic group, ages 5 to 9 and 10 to 12; and all the girls in both groups. Only the 10- to 12-year-old girls in both groups had 10 per cent or more with values below 20 mcg. These results indicate that although depletion of vitamin A stores was indicated in only a few subjects, a rather high percentage in some groups had serum vitamin A values which were below optimum.

Shank *et al.* (10) found that the plasma vitamin A decreased with the development of acute rheumatic fever and the intensity of the attack. In severe attacks, concentrations varied between 0 and 70 I.U. per 100 ml. (0 and 21 mcg. per 100 ml.). Hence, it was to be expected that few of the inactive rheumatic fever subjects in this study would have values below 20 mcg.

Mean serum carotene values for the older boys and girls in both groups were somewhat lower than for the younger children (Table 1) with the control girls (ages 13 to 18 years) having the lowest values. Also, in the non-rheumatic group, the girls had slightly lower values than the boys of the same age. No sex differences were shown for the rheumatic fever children. These values are somewhat higher than those which have been reported (5–8). Szymanski and Longwell (5) found no sex difference in plasma carotene in children from one to nine years of age while in older children, the girls had lower values.

The percentage of subjects with blood carotene values below 75 or 125 mcg. per 100 ml. was relatively small when compared to the findings of Clayton *et al.* (7), of Storvick *et al.* (8), and of Bessey and Lowry (9). From 0 to 11 per cent of the children had values below 75 mcg. Thirty per cent or more of the following groups had carotene values below 125 mcg.: boys and girls in the rheumatic fever group, ages 13 to 19; control girls, ages 5 to 9 and 10 to 12; and control boys, ages 13 to 19.

The mean vitamin A values in the diets of all groups of children (1) exceeded the recommended allowances. Since this study was made during the months of July through November, the relatively high mean serum carotene values may reflect intake of plant sources high in vitamin A value. Of this vitamin A value, 54 per cent for the rheumatic fever group and 46 per cent for the control group came from fruits and vegetables. Green and yellow vegetables (0.4 to 0.7 serving per day [2]) supplied almost 25 per cent of the total vitamin A value, while citrus fruits and tomatoes and other fruits, each supplied approximately 10 per cent. Included in "other fruits" were apricots, peaches, and cantaloupe which were used abundantly while in season.

A seasonal variation in plasma carotene values has been noted among Denver children (5). Higher values were obtained from June through November than at other seasons, and a definite relationship between plasma carotene and intake of vitamin A from plant sources was also found.

Serum Ascorbic Acid

The serum ascorbic acid values did not show any significant sex difference. The younger children had higher mean values than the older. The differences between the values for the 5- to 12-year-olds and the 12- to 19-year-olds were highly significant for the control boys and for both sexes in the rheumatic fever group.

From 70 to 100 per cent of all the children under 10 years of age and of the rheumatic fever children under 13 years had mean ascorbic acid values of 1.0 mg. per 100 ml. or more which indicates saturation (11–13). In the 10-to-12-year control group, only 67 and 62 per cent of the boys and girls, respectively, had values of 1.0 mg. per 100 ml. or above, while the percentages of 13- to 19-year-old-children of both groups were 48 to 74.

The ascorbic acid level in the blood serum considered by some to indicate a less-than-optimal dietary intake is 0.6 mg. per 100 ml. (14). The percentages of children with ascorbic acid values below this level were 5 to 30; 19 per cent of the control

girls, ages 10 to 12; 11 and 30 per cent of the older boys; and 9 per cent of the older girls in both groups (Table 1). Few of the younger children had values this low. Only nine children (about 3 per cent) had ascorbic acid values below 0.4 mg. per 100 ml.

These serum ascorbic acid values are similar to those reported for New York children (7) of the same age and sex, but are somewhat higher than those for children in Maine (7), Oregon (8), and Maryland (15), and are markedly higher than those reported for New Mexico children (16) and a group of children with inactive rheumatic fever (17). Rinehart *et al.* (17) also studied children with active rheumatic fever who had values of 0.3 mg. per 100 ml.

The mean dietary ascorbic acid intakes ranged from 53 to 84 mg. for all children. The 13- to 19-year-old control children had mean dietary intakes which were from 52 to 74 per cent of the recommended allowances, while in the rheumatic fever group the mean intakes were somewhat higher (79 to 88 per cent). The younger children had mean dietary intakes which met the recommended allowances except for the girls in the 10-to-12-year group.

It is difficult to determine how the relation of the single determination of serum ascorbic acid on a fasting sample to the dietary intake as calculated in this study should be evaluated. Moyer *et al.* (18) found that an intake of 60 mg. ascorbic acid was consistent with a serum ascorbic acid concentration of 0.7 mg. per 100 ml. or more for children 8 and 12 years of age. Storvick and co-workers (12, 19) found that the recommended allowance of ascorbic acid maintained mean plasma values above 0.8 mg. for younger adolescents (ages 12 to 14) and older adolescents (ages 16 to 19). It would seem that the serum ascorbic acid values for the 13- to 19-year-old children in this study are somewhat higher than would be expected from their dietary intake. The use of supplementary vitamins would have some effect. However, only 6 per cent of the older rheumatic fever children and none in the control group were taking ascorbic acid supplements during the week that the food record was kept.

When dietary ascorbic acid intakes were plotted against serum ascorbic acid values, more boys in the rheumatic fever group had low serum values on high intakes than in the non-rheumatic group of boys. The reverse was also true. That is, there were more high serum values on lower intakes among the control boys than among the rheumatic fever boys. When comparing boys and girls on the same dietary intakes, the control boys and girls had about the same serum values; however, in the rheumatic fever group, the boys had more low values. A small but statistically significant correlation between dietary intake of ascorbic acid and serum ascorbic acid values of 0.24 was shown for the control girls (ages 5 to 18). Correlations for the other groups were not significant. Apparently other factors, such as intakes of supplements and atypical diets in the week recorded, also influenced the serum ascorbic acid levels.

Riboflavin

The mean free serum riboflavin values were significantly higher for the control girls than for the boys of the same age (ages 5 to 9 and 5 to 19). Differences between sex were not consistent for the rheumatic fever children. As shown in Table 1, 27 per cent or more of all groups had free riboflavin values below 0.6 mcg. per 100 ml. However, 17 per cent or more of the following groups of children had values below 0.4 mcg.: boys and girls in the rheumatic fever group, ages 5 to 9 and 13 to 19; control boys, ages 5 to 9 and 13 to 19; and control girls, ages 5 to 9. Levels of 0.4 and 0.6 mcg. per 100 ml. were chosen arbitrarily and are not related to possible physiologic significance.

Total serum riboflavin values for all groups were similar (2.3 to 3.1 mcg.). These values were somewhat lower and the free riboflavin values similar to those reported for normal adults and children under twenty (11, 20). However, it should be noted that the values in this study are for fasting samples. Nonfasting subjects were used in one study (20).

The percentages of children with total riboflavin values below 2.3 mcg. were relatively high, that is, 14 to 62 for the rheumatic fever group and 18 to 54 for the control group. However, only four groups of children had 20 per cent or more with values below 1.9 mcg.: boys and girls in the rheumatic fever group, ages 13 to 19, and control girls, ages 5 to 9 and 13 to 19.

Phosphatase

Serum phosphatase determinations were not made on all subjects because it was impossible to make this analysis at the beginning of the study. The 13- to 19-year-old boys of both groups had higher phosphatase values than the girls of the same age. However, only the differences between the boys and girls, ages 13 to 19, in the rheumatic fever group were significant. The older girls had much lower serum phosphatase values than the younger girls, while less age difference was apparent in the means for the boys. The correlation of -0.53 between age and serum phosphatase values for the rheumatic fever girls was highly significant. Correlations for the other groups were not significant. The mean values obtained in this study are similar to those reported for normative data on serum phosphatase (21).

The influence of age and sex on serum phosphatase has been noted previously (9, 21, 22). Children under ten years of age did not show any sex differences, while older girls had lower values than the younger children (21, 22).

Less than 10 per cent of the children in both

groups had values above 8 units, a level Bessey and Lowry (9) considered unsatisfactory. However, Clark and Beck (21) and Harrison *et al.* (22) did not find evidence of pathology in subjects with high values.

Cholesterol

The girls tended to have somewhat higher total serum cholesterol values than the boys. The differences between the girls and boys for the rheumatic fever group, ages 13 to 19 and 5 to 19, were significant. Several groups of children had 30 per cent or more with values above 180 mg., namely, the control boys and girls, ages 10 to 12, and all rheumatic fever children except the 13- to 19-year-old boys. Only the control boys and girls, ages 10 to 12, and the rheumatic fever girls, ages 5 to 9, 10 to 12, and 13 to 18, had 19 per cent or more of subjects with cholesterol values above 200 mg.

The mean total cholesterol values of 154 to 183 mg. and range of 96 to 270 mg. obtained in this study are similar to the values for children under thirteen years of age reported by Offenkrantz and Karshan (23), while the means but not the range are lower than those reported by Hodges *et al.* (24). A group of children with rheumatic fever (23) had total cholesterol values that did not differ from the values found in normal children. In a later study by Offenkrantz (25), total cholesterol levels were definitely lowered for all but a few children during periods of activity of the rheumatic disease.

TABLE 2

Free and total serum cholesterol values of children with and without rheumatic fever

SUBJECTS	CHOLESTEROL		
	Free	Total	Ratio
Rheumatic Fever Subjects			
	mg.	*mg.*	*mg.*
Boys			
5–9 years	44	169	0.26
10–12 years	45	167	0.26
13–19 years	41	157	0.26
Girls			
5–9 years	45	176	0.24
10–12 years	46	183	0.25
13–18 years	45	172	0.26
Non-Rheumatic Subjects			
Boys			
5–9 years	41	159	0.26
10–12 years	45	176	0.26
13–19 years	40	154	0.26
Girls			
5–9 years	45	175	0.26
10–12 years	45	176	0.26
13–18 years	41	162	0.25

In Table 2 are presented the free and total serum cholesterol data with the cholesterol ratio (free/total). The ratios for the various groups were similar (0.24 to 0.26 mg.). Free cholesterol values fluctuated in the same way that the total cholesterol values did. That is, higher total values were associated with higher free values.

Since cholesterol values were obtained for a limited number of parents, it was of interest to see how the cholesterol values of boys and girls in the same family compared with those of their parents. In five families in which both parents had cholesterol values above 200 mg., the children had values similar to those children who had only one of the parents with values above 200 mg. Hence, the two groups were combined in Table 3. Five of these families and two families in which the parents had lower cholesterol values included one or two control children as well as one or two children in the rheumatic fever group. Differences between the children with or without rheumatic fever were slight. It will be noted from Table 3 that the girls and boys with parents having total cholesterol values of 200 mg. or above had higher values than those of parents with lower cholesterol values.

Correlations

Possible relation between pairs of biochemical tests were determined by calculation. Highly significant positive correlations for both groups of girls (0.34 and 0.56) and significant positive correlations for the boys (0.29 and 0.27) were obtained for the paired tests of serum carotene and serum ascorbic acid. Storvick *et al.* (8) and Babcock *et al.* (26) have reported this significant positive correlation previously.

A multiple regression was calculated to determine the influence on the various blood constituents of sex, rheumatic fever history, age, and intakes of the ten dietary nutrients. The significant correlations discussed here are presented in Table 4. Many sig-

TABLE 3

Total serum cholesterol values of children and their parents

FAMILY CHARACTERISTIC	MOTHERS		FATHERS		GIRLS		BOYS	
	Number	Cholesterol	Number	Cholesterol	Number	Cholesterol	Number	Cholesterol
		mg.		*mg.*		*mg.*		*mg.*
One or both parents with cholesterol values of 200 mg. or more	14	206	15	229	15	186	9	170
Both parents with cholesterol values below 200 mg.	8	172	8	167	5	151	7	144

TABLE 4

Simple and multiple correlation coefficients

FACTOR	SIMPLE r²†			
	Serum ascorbic acid	Serum carotene	Serum cholesterol	Free serum riboflavin
Sex	(+).00110	(−).00040	(+).02729*	(+).03730**
Rheumatic fever or non-rheumatic	(−).01727*	(−).01291	(−).00418	(+).00041
Age	(−).08390**	(−).08623**	(−).01541	(−).00010
Calories	(−).03342**	(−).00585	(−).01670*	(−).00007
Protein	(−).02669*	(+).00002	(−).00889	(−).00033
Carbohydrate	(−).03740**	(−).02164*	(−).02501	(−).00168
Calcium	(−).01158	(+).00884	(−).00084	(+).00000
Iron	(−).01024	(−).00177	(−).01736*	(−).00153
Vitamin A	(+).00673	(+).00158	(−).02107*	(−).00000
Thiamine	(−).02112*	(−).00289	(−).01164	(−).00366
Riboflavin	(−).00512	(+).00046	(−).01480	(−).00028
Niacin	(−).01244	(−).00470	(−).02712	(−).00181
Ascorbic acid	(+).02020*	(+).04295**	(−).00016	(+).00040
R^2 for 13 factors	.160**	.203**	.079	.062
R^2 for first 6 factors	.110**	.144**	.057*	.055*
R^2 for first 3 factors	.103**	.099**	.049**	.038*
R^2 for factors 3, 6, and 13	—	.157**	—	—

† ( ) indicates sign of simple correlation if the square root was extracted.

* Significant at the $P < 0.05$ level.

** Significant at the $P < 0.01$ level.

nificant simple correlations were shown by the data. However, not all of these proved to be significant after the multiple regression was made.

The first r^2 in the table shows the percentage of variation in each serum constituent that can be accounted for by the influence of the thirteen factors studied. Another multiple regression was then made on factors showing a significance with the greatest number of blood constituents in the simple correlations. In the case of serum ascorbic acid, it will be noted that the second r^2 shows that the first six factors accounted for 11 per cent of the variation while only 5 per cent resulted from the other seven factors. A further breakdown for the first three factors (sex, group, age) showed that they accounted for 10 per cent of the variation. Age had the most effect on the serum ascorbic acid values. For serum carotene, a breakdown of the influences of age, carbohydrate, and dietary ascorbic acid showed that these three factors accounted for 16 per cent of the variation while only 4 per cent resulted from the other ten factors. Age had the greatest effect on the carotene values, while sex had the greatest effect on total cholesterol and free riboflavin values.

SUMMARY

Serum vitamin A, carotene, ascorbic acid, riboflavin, phosphatase, and cholesterol values were determined for 131 children with a history of rheumatic fever and for 131 children of the same ages without such a medical history.

Comparison of paired values for the two groups showed the following significant differences: higher values for serum ascorbic acid and serum carotene for the girls in the rheumatic fever group; higher values for free and total serum riboflavin and serum phosphatase for the rheumatic fever boys; and higher values for free serum riboflavin for the control girls. These differences appear to have little nutritional significance.

The majority of the children had high or normal values for all blood constituents, except as follows: from one-fourth to one-half of all children had vitamin A values below what is generally considered satisfactory, and total serum riboflavin values were low for approximately half of the older children.

More girls than boys of all age groups had serum cholesterol values above 200 mg. per 100 ml.

A multiple regression was calculated to determine the influence on the serum constituents of sex, rheumatic fever history, age, and intake of each of the nutrients. Age had the greatest effect of the various factors studied on serum ascorbic acid and carotene values. Sex had the greatest effect on total serum cholesterol and free riboflavin values. These correlations were significant.

Statistically significant correlation coefficients were obtained for serum carotene and ascorbic acid.

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Insulinase

Insulinase, a substance produced in the liver which specifically destroys insulin, may be a new clue to the underlying cause of diabetes, according to Dr. I. Arthur Mirsky and Gladys Perisutti, who reported work at the Department of Clinical Science, University of Pittsburgh School of Medicine at the recent meeting of the American Chemical Society in New York City. Dr. Mirsky explained that the activity of insulinase has been demonstrated by combining insulin with extracts, slices, or ground-up portions of liver, and its mode of action has been established by the use of insulin tagged with radioactive iodine.

Dr. Mirsky postulated that any condition which will produce an increase in the activity of insulinase in an individual will result in an insulin insufficiency and the consequent development of diabetes mellitus. Studies are now in progress to determine whether factors which inhibit the action of insulinase will also influence the source of diabetes mellitus in man.

"It is generally acknowledged that insulin is destroyed rapidly in the intact organism," Dr. Mirsky said. "That this destruction may be due to some catalytic factor in the tissues was revealed in the observation that the incubation of insulin with slices, homogenates, and extracts of liver from various species, including man, results in a destruction of the biologic activity of the insulin. The specificity of the enzymes responsible for insulin degradation was established by comparison of the effect of liver extracts on iodine-131 labeled insulin with that on iodine-131 labeled human serum albumin, chymotrypsin, ribonuclease, and other proteins."

Comparison of One-Day Food Record and Research Dietary History on a Group of Obese Pregnant Women[1]

ANNA S. van den BERG and J. MAYER, Ph.D., D.Sc.[2]

Department of Maternal and Child Health and Department of Nutrition, Harvard School of Public Health, Boston

MANY methods have been used in assessing dietary intake of individuals and of groups. The one most frequently used has been the food record—one-day food record (1), and records of three or more consecutive days (2–7). Data have been obtained by actual weight of food ingested (8), supplemented at times with balance studies and chemical analysis of nutrients, and by interview methods: 24-hr. recall (6–8), clinic dietary history (4, 9), and research dietary history (10). An important question is: which of these different methods gives a reliable estimation of food intake of individuals or of groups? Valuable information on this can be had from comparison of these different methods.

In the study of food intakes of obese and nonobese women (4), it was found that while different methods of food recordings (one-day and three-day food records) and interviews (clinic dietary history and research dietary history) gave equivalent results on a group basis when applied to different groups of women of normal weight, they led to widely divergent caloric intakes when applied to groups of obese women. For the obese groups, the extremes were represented on the low side by the record method and on the high side by the research dietary history with the clinic dietary history in an intermediary position; differences obtained between results by the research dietary history and the one-day food record reached almost an average value of 900 calories per day. It must be noted here that possible differences between the groups themselves could not be excluded as at least a contributory factor, although preliminary results obtained on twelve obese women subjected to both methods made this interpretation unlikely.

In data from different population groups (5–7), a comparison was made of the use of the dietary history and the 24-hr. recall and of the dietary history and seven-day record (for the same subjects) as methods of estimating the nutrient intake of an individual and of a group. It was found for nearly all population groups studied that the research dietary history did not give the same estimate of intake for an individual or for the mean of a group as either the seven-day record or the 24-hr. recall. These findings are in accord with those of Huenemann and Turner (2), who compared results obtained by dietary record and dietary history methods. Trulson, in reassessing Huenemann's work, noted that the greater the distance in time of keeping the weighed diet record from preliminary dietary history, the smaller the relationship. She also observed that the ability to estimate or predict intake of an individual, based on knowledge of intake by one method, varies with the food or nutrient (7).

The present report deals with the comparison of intakes of a group of obese women who were subjected to both a one-day food record and to a research dietary history.

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SELECTION OF GROUP AND METHODS

The subjects were thirty-five obese pregnant women of the Research Obesity Clinic of the Boston Lying-in Hospital. Women were selected for this clinic on a basis of obesity: a pregravid weight of 160 lb. or more and a height of 5 ft. 6 in. or under. A few very short or very tall women who did not comply with these standards were included with special consideration of weight in relation to height. All patients at conception were 20 lb. or more above an "ideal" (11) non-pregnant weight. A subject who had been recently or was on a strict reducing diet was excluded. A subject with a history of cardiac or renal disease, diabetes, toxemia, and so on, or with a previous pregnancy or pregnancies which resulted in an infant with congenital malformation or in a stillbirth or in a neonatal death was excluded also. A history of previous pregnancy or pregnancies resulting in abortion or uncomplicated premature birth was not cause for exclusion. Participation in this Research Clinic was voluntary. The mean age of the thirty-five women in this study was twenty-eight years (range eighteen to forty-one). They were sixteen to twenty-eight weeks pregnant when first interviewed.

The record form used in the study was the one-day record form of a classic type accompanied by the "Instructions for Making Your Food Record" sheet (1). It was used strictly as a record form and not checked by interview when returned. The form was given to the patient at the time of her visit to the Monday, Tuesday, or Friday out-patient clinic and the patient was simply instructed to record completely according to the printed instructions her food intake for one day of her choice. The days chosen by the patients were: Monday, 10; Tuesday, 8; Wednesday, 3; Thursday, 3; Friday, 3; Saturday, 1; Sunday, 3; no day was recorded on 4 intakes.

The research dietary history method, as previously described (10), was conducted a week or so later by an experienced interviewer who had no knowledge of the one-day food record. Results were analyzed for caloric, protein, fat, and carbohydrate content; the tables of Leichsenring and Wilson (12), with additions of values from Bowes and Church (13), were used. Caloric values derived from different food groups and the caloric pattern of meals and snacks as revealed by the two methods were calculated. The resulting figures were used in comparing the two methods of collecting data.

TABLE 1

Comparison of mean caloric, protein, fat, and carbohydrate intakes obtained with one-day food records and research dietary histories

NUTRIENT	ONE-DAY FOOD RECORD	RESEARCH DIETARY HISTORY	ONE-DAY FOOD RECORD VALUES EXPRESSED AS PER CENT OF RESEARCH DIETARY HISTORY VALUES	PROBABILITY
Calories	1763 ± 514	2354 ± 600	77.2 ± 23.9	<0.001
Protein (gm.)	72 ± 24	84 ± 20	87.2 ± 20.4	<0.001
Fat (gm.)	78 ± 26	106 ± 30	75.9 ± 22.9	<0.001
Carbohydrate (gm.)	193 ± 65	263 ± 83	77.7 ± 33.0	<0.001

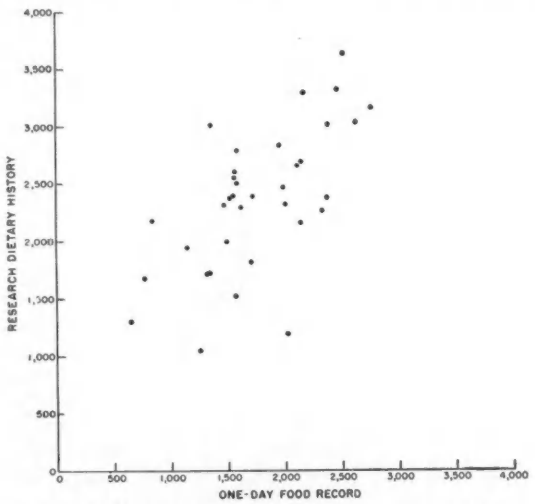

FIG. 1. *Caloric intake by one-day record vs. research dietary history.*

RESULTS

Caloric, Protein, Fat and Carbohydrate Intake. To compare the two methods, in estimating the average intake of this group, the one-day record value was expressed as a percentage of the research dietary history value. Then, the paired comparison "t"-test which eliminates the variation due to size of indi-

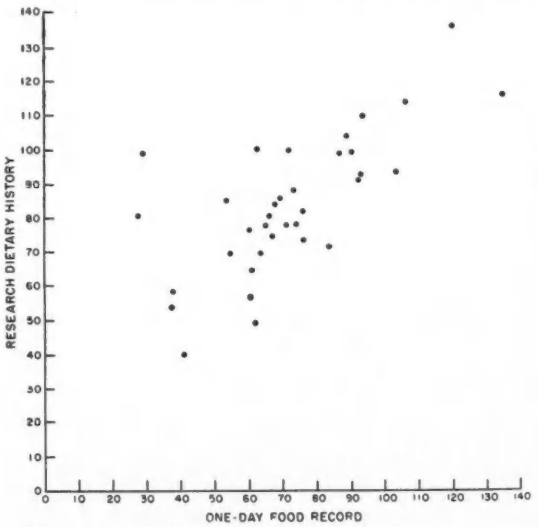

FIG. 2. *Protein intake (gm.) by one-day record vs. research dietary history.*

vidual intake, was applied to the values. Table 1 shows that the research dietary history gave caloric intakes greater than those given by the one-day record, the difference being about 600 calories and of high order of statistical significance. For the nutrients, too, the differences were in the same direction and very highly significant for protein, fat, and carbohydrate (other nutrients were not estimated).

Figures 1, 2, 3, and 4 show the distribution of caloric, protein, fat, and carbohydrate values as yielded by the one-day food record plotted against the values obtained by the research dietary history. From these graphs, it is apparent that in estimating the caloric, protein, fat, and carbohydrate intakes of an individual, a one-day food record and a research dietary history do not give essentially the same answer.

Calories Derived from Different Food Groups. Table 2 gives a comparison of the two methods as far as calories derived from various food groups are concerned. Mean values and the frequencies with which these foods are recorded in the two dietary methods are given. It is readily seen that differences between average values yielded by the two methods were large for cereal, bread, and crackers; desserts; sweets, popcorn, potato chips, and so on; and butter and other fats. The differences were small for milk, meat and fish, and eggs.

The paired comparison "t"-test was applied to caloric values for food groups contributing 10 per cent or more to the total mean caloric value of the diets, i.e., to milk; meat and fish; cereal, bread, and crackers; and desserts. Results given in Table 3 show that the mean difference between caloric estimates obtained by the two dietary methods was

TABLE 2

Comparison on a group basis of caloric values derived from various food groups, as obtained by one-day food records and by research dietary histories

FOOD GROUPS	AVERAGE CALORIC VALUE		FREQUENCY OF RECORDINGS IN THE GROUP	
	One-day food record	Research dietary history	One-day food record	Research dietary history
Milk	339	342	35	35
Cheese	4	34	1	25
Meat and fish	390	352	35	35
Eggs	66	65	22	34
Fruit	143	187	33	35
Vegetables	122	158	31	35
Cereal, bread, and crackers	281	342	33	34
Spaghetti, macaroni, and rice	56	73	6	32
Butter and margarine	52	127	26	34
Other fats	35	113	17	32
Desserts (cake, pie, puddings, doughnuts, cookies)	142	310	18	34
Ice Cream	37	42	8	26
Candy	9	28	1	21
Waffles, pancakes, French toast	0	6	0	13
Sugar, jam, jelly, sirup, molasses, cocoa, chocolate sirup	34	56	23	27
Soup	40	50	8	26
Soft drinks	20	21	5	23
Beer, wine, and so on	0	6	0	8
Miscellaneous (popcorn, potato chips, pretzels, pickles, nuts, and peanut butter)	0	46	0	18

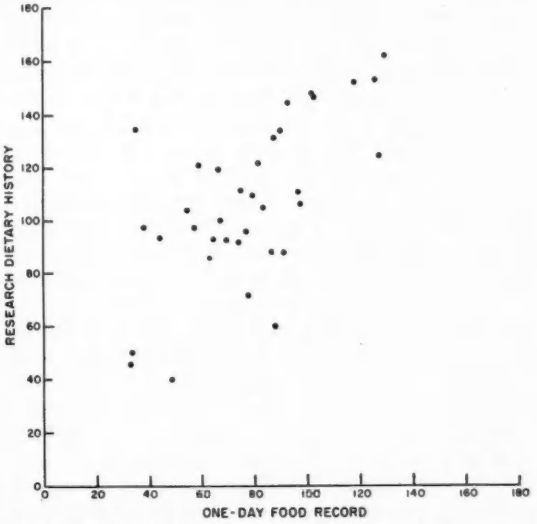

FIG. 3. *Fat intake (gm.) by one-day record vs. research dietary history.*

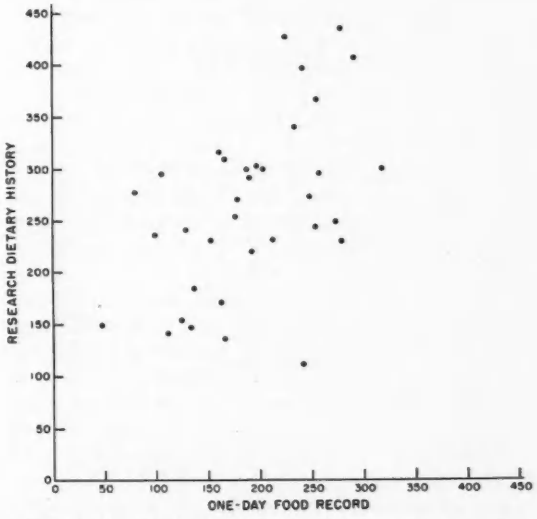

FIG. 4. *Carbohydrate intake (gm.) by one-day record vs. research dietary history.*

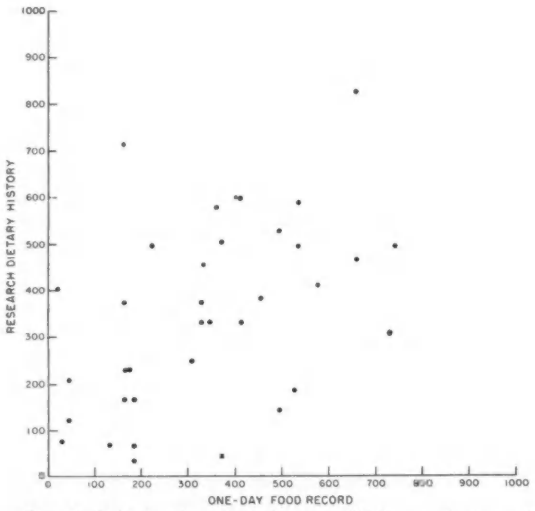

FIG. 5. *Caloric value derived from milk by one-day record vs. research dietary history.*

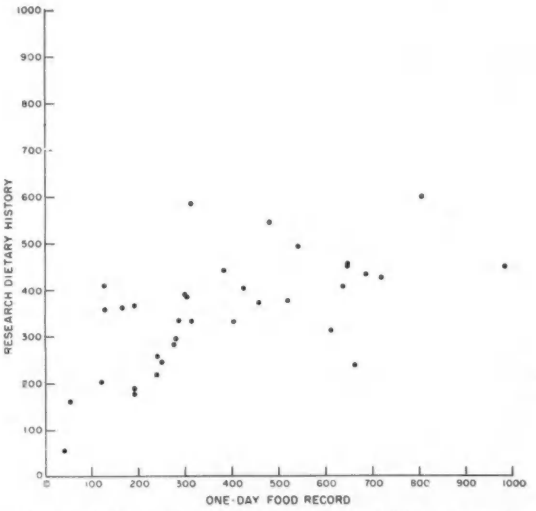

FIG. 6. *Caloric value derived from meat and fish by one-day record vs. research dietary history.*

highly significant for cereal, bread, and crackers and for desserts but not significant for milk or meat and fish. This does not mean that in estimating the milk or the meat and fish intake of an individual, a one-day food record and a dietary research history give like results; contrarily, Figures 5 and 6 indicate that the two methods of assessing dietary intake yield dissimilar results. A look at the mean difference values and the big variations around these (Table 3) substantiates the conclusion that the two methods do not give the same picture of nutrient intake and that the relationship between the two methods varies largely from individual to individual.

The differences in estimates appeared due mainly to inaccurate description of the composition and size of dishes on the one-day record (i.e., vague description of ingredients of prepared dishes, salads, and sandwiches and of quantity of meat and fish, milk, other beverages, butter, mayonnaise, salad dressing and other fats, and sugar), and to omission from the one-day record of foods commonly consumed on other days (starches, desserts, sweets, fats, and so on). Cereal, bread, and crackers on the one-day record, although usually represented, were frequently under-reported in amount in comparison with the research dietary history.

Caloric Content of Meals and Snacks. Table 4 gives the caloric pattern of the mean difference between caloric estimates of meals and snacks for the group as revealed by the one-day food record and the research dietary history. It will be noted that the only meal for which the difference was of a very high order of significance was the evening meal. The difference represents more than half of the total caloric difference between the two methods. The mean difference between estimates obtained by the two methods was also significant for the afternoon and for the evening snacks. That is, the bulk of the extra calories accounted for by the research dietary history was found in the food intake following the noon meal. While morning patterns, as revealed by the two methods, were similar, it is of interest to note that the thorough questioning of the research dietary history revealed that three obese women made a practice of having two full-size breakfasts.

TABLE 3

Mean difference in calories between estimates obtained by research dietary histories and one-day food records for four food groups

FOOD GROUP	MEAN ± STANDARD DEVIATION	PROBABILITY
Milk	2.8 ± 205.6	0.9
Meat and fish	37.3 ± 183.9	0.23
Cereal, bread, and crackers	83.3 ± 131.3	<0.001
Desserts	167.8 ± 249.4	<0.001

DISCUSSION

There is little doubt that spending the time necessary to obtain the research dietary history gives experienced personnel an opportunity for much more detailed appraisal of qualitative and quantitative food habits and patterns than does the recording of intakes for one day. Though various methods of estimating dietary intake may give similar results for the mean of a group (1), correspondence between record and history methods varies largely with the type of subject studied (5, 6), and they cannot be used interchangeably to describe intake of an individual (2, 5, 6). The difference in results yielded by the one-day food record and the research dietary history in this study exemplify well the proposition that as soon as an unusual dietary situa-

TABLE 4

Caloric pattern of meals and snacks of overweight women as revealed by the one-day food record and research dietary history

TIME OF FOOD CONSUMPTION	ONE-DAY FOOD RECORD			RESEARCH DIETARY HISTORY			MEAN DIFFERENCE	PROBABILITY
	Calories recorded	Number of women	Percentage of women	Calories reported	Number of women	Percentage of women		
Before breakfast	—	0	0	21 ± 69	3	9.8	21 ± 69	0.07
Breakfast	337 ± 154	34	97.2	360 ± 142	34	97.2	23 ± 158	0.42
Between breakfast and noon meal	66 ± 108	18	51.7	72 ± 99	23	65.7	6 ± 127	0.76
Noon meal	495 ± 242	32	91.7	546 ± 227	34	97.2	51 ± 250	0.23
Between noon meal and evening meal	127 ± 157	26	74.3	194 ± 175	32	91.7	67 ± 149	<0.01
Evening meal	620 ± 277	35	100.0	933 ± 294	35	100.0	313 ± 328	<0.001
After evening meal	134 ± 142	22	62.9	230 ± 183	33	94.3	92 ± 211	<0.01

tion is encountered, it becomes necessary to spend considerable time with the subject to get a satisfactory picture of the dietary pattern, even on a group basis. While without checks by actual weight and chemical analysis, it is impossible to know how dependable the results obtained by the research dietary history methods are, the high caloric values for the obese, pregnant woman in this study are certainly more in accordance with physiologic considerations than the data yielded by the one-day food records.

The source of "error" encountered in the one-day record as applied to the obese, pregnant woman was at least twofold. First, besides the customary uncertainty as to size of portions, there was a constant tendency to under-report intakes, possibly because the subject's idea of a normal-size portion may be greater than that of the woman of normal weight. Second, in the one-day record method of taking an isolated day and assuming it to be representative of long-time food habits, many foods that are regularly eaten are omitted while other foods appear in quantities not typical of "usual" food habits.

An easy, but we believe misguided interpretation of the low intakes reported by the one-day record is that the subjects were reluctant to describe their true intakes on the day recorded. It appears much more likely that they recorded their intakes truthfully but simply did not actually consume on that particular day the kinds and amounts of food customarily eaten. It seems that the mere fact of recording the food eaten acts as a check on the intake; the evening meal where the excess is usually consumed (1, 14) is reduced and certain definite foods eliminated from meals and snacks. If the low one-day record values are accepted as truthful, then it is of special interest to note how these women spontaneously reduced their intakes, and these findings can be used as a basis for guidance in the matter of reducing programs.

The fact that Mondays were recorded more often than other days is not likely to have minimized the average one-day record intakes as it has been shown that although on the average it is immaterial which day is chosen for a one-day food record, there was some tendency in a group of pregnant women in Massachusetts for higher intake on Monday following a low intake on Sunday (15).

SUMMARY AND CONCLUSIONS

It appears that when a comprehensive picture of dietary intake of obese, pregnant subjects is required, short cuts, such as the one-day food record method which might be satisfactory for certain population groups, fail to give a proper picture either on an individual basis or for the mean of a group. The "errors" by the one-day record are always on the low side in regard to caloric intake as compared with an extensive study, such as that exemplified by Burke's research dietary history, with large variation in the magnitude of the differences between the two methods. The differences are due to under-reporting of certain foods, inadequate description of size of portions, omission of foods—particularly high caloric, low-nutritive-value supplements—and to diets not characteristic of long-time food habits. Fat and carbohydrate are particularly under reported with the bulk of the "missing" calories found in the evening meal and snacks.

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The Right to the Search for Knowledge

To a scientist, a body of knowledge which has ceased to grow is not only dull, it is a barrier opposed to that incessant growth which is the very essence of science. Branches of science which have petrified in this way have again and again delayed advances in much the same ways as taboos and fetishes have delayed man's general progress—for a taboo is nothing more than a code of action based on a body of knowledge or supposed knowledge which has ceased to grow and which is no longer subject to revision.

To a scientist, knowledge is much more nearly a way of finding out things than it is a collection of things that have been found out. At the very least, knowledge is fluid, constantly changing, always growing but always subject to revision, even though the revision sometimes involves the abandoment of firmly held opinions.

Consequently, to a scientist, man's right to knowledge necessarily implies man's right to that search for knowledge which we call research; it is at least as much man's right to the laboratory as it is his right to the library. It is the right to strive for a continually growing understanding of nature and for a continually increasing ability to control the processes of nature. The right to a living, growing knowledge is nearly equivalent to the right to survive.

Both as members of the human race and as citizens of a particularly fortunate community [the United States], we must seek to support and defend man's right to the search for knowledge and to foster every possible way of prosecuting the search. In this search, man has found two generally useful methods of attack, usually classified as fundamental or basic, and applied or developmental. These are terms I dislike very much, partly because I think their use obscures a more important classification, but mostly because the terms have become entangled with unfortunate and unnecessary judgments of value. In their extreme form, these become the snobbery of the theorist who claims to be unhappy if his discoveries turn out to have any practical value and the contrary snobbery of the practical man who claims that his only motive in the search for knowledge is dollars and cents.

James Conant has made what seems to me to be a more important distinction, namely that between the work of the uncommitted investigator and programmed research. The latter is conscious of its goal and can largely plan its path toward that goal. The former sets out to explore a neglected area or to look for new and unexpected phenomena or for new generalizations in a familiar one.

Here, also, any absolute judgement of relative values seems to me to be completely unjustified, either in terms of satisfaction to the researcher or in terms of benfit to society. Both kinds of work are vitally necessary to our nation and to the human race, and both deserve large public support. It is only too clear, however, that it has always been easier to get support for programmed than for unprogrammed research, and that there are powerful forces now acting which tend even more to favor the former.

The willingness to gamble on the uncommitted investigator is equally important to our national survival. The fact that our society does admit the value of this kind of research and does support it, although somewhat feebly, is to my mind our best hope for peace and security.

The right to the search for knowledge brings us, as all rights do, to a responsibility—the responsibility of society to maintain the search for knowledge and to maintain it in all the ways in which past experience has shown to be profitable. But, a responsibility of society has no meaning unless it is felt as a responsibility by the people who make up that society. The government and industry will do little or nothing unless they are backed by informed public opinion. And the way to get this is through the creation of an atmosphere in which the importance of these problems are generally recognized and in which the search for ways in which to solve them is actively pursued by a great many people.

A human right is a privilege which man retains only if he accepts the responsibility of protecting it—and man's right to the search for knowledge is no exception.—*Excerpts from an address by Professor Louis P. Hammett of Columbia University, given before the American Chemical Society on March 27, 1954, in Kansas City, Missouri.*

Effect of Cooking on Bacterial Count of Ground Ham Mixtures[1]

BARBARA BROWN DESKINS[2] and DOROTHY L. HUSSEMANN, Ph.D.

School of Home Economics, College of Agriculture, University of Wisconsin, Madison

NUMEROUS outbreaks of food poisoning have been recorded in the literature as having been caused by the growth of toxin-producing micrococci in ham. In institutional cookery and in the home, ground ham is often used in "meat-extender" or "left-over" dishes, such as meat loaves or croquettes. The preparation of these dishes requires increased handling of the ham by grinding and mixing operations, thus giving a greater opportunity for contamination with micrococci from human sources. Also, the ham from which these mixtures are made is often held for long periods of time before use, allowing a possibility for the growth of any micrococci present.

Among the food poisoning outbreaks which have implicated ground hams as the vehicle of intoxication was an epidemic at a Navy mess hall, reported by Tipton and Smiley (1). In that instance, ground ham was served with scrambled eggs. Another outbreak reported by Petrie (2) appeared to have been caused by ground ham used in ham salad.

The present study was developed in an attempt to examine the bacteriologic content of ground ham mixtures as affected by cooking procedures. Uninoculated ground ham mixtures as well as those inoculated with a strain of *Micrococcus pyogenes* var. *aureus* were used to prepare ham loaves and ham croquettes.

PROCEDURE

Preparation of Ham Loaves

Ham loaves were prepared using ingredients in the following proportions per loaf:

220 gm. ground ham
45 gm. dry bread crumbs
75 ml. reconstituted evaporated milk
3 gm. salt
1 egg (about 48 gm.)

Sterile equipment was used, and the ingredients were kept covered except while being measured in an attempt to keep the bacterial load as close to the original numbers as possible. The ingredients were thoroughly mixed and placed in sterile loaf pans. Each loaf was then baked in a 177°C. oven to an internal temperature of 80°C. as measured by a meat thermometer placed in the center of the loaf.

In the first three series of experiments (A, B, and C) uncooked, cured ham was used in preparation of the loaves. In Series D, cooked, cured ham was used. The cooked ham was prepared as follows: About 24 hr. before each loaf was made, a slice of ham was baked to an internal temperature of 80°C. in a 177°C. oven. It was then covered, allowed to stand at room temperature for 1 hr., and placed in the refrigerator until used in the preparation of a ham loaf.

Inoculum

The inoculum to be added to the ham loaves was prepared by growing *M. pyogenes* var. *aureus* # 196[3] on tryptose agar slants for 24 hr. in a 37°C. incubator. From this growth, standard saline suspensions were prepared containing about 500,000,000 cells per milliliter. The cell suspensions were standardized by turbidity readings.

Bacteriologic Analysis

In the first series of studies, Series A, fifteen uninoculated ham loaves were analyzed bacteriologically. Samples weighing 10 gm. were removed from each ham mixture both before and after cooking. From the uncooked mixture, portions were taken from three approximately equidistant places in the mixing bowl to make one composite sample. In the case of the cooked loaf, five portions were removed

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[2] Present address: Poultry Department, College of Agriculture, The Ohio State University, Columbus.

[3] This culture was obtained through the courtesy of Dr. G. M. Dack, Professor of Bacteriology and Director, Food Research Institute, University of Chicago.

using cork borers to make up a composite sample. Each of the composite samples was placed in a separate jar containing 40 ml. sterile saline and mixed on a power-driven blender for 3 min. Portions of the suspensions thus prepared or dilutions thereof were then plated on tryptone glucose extract agar (TGE) to ascertain the approximate total count of bacteria and on Staphylococcus Medium 110 (SM110) in an attempt to determine the micrococci count.

In the next three series of studies (B,C,D), ham loaves which had been inoculated with *M. pyogenes* var. *aureus* were analyzed for bacterial content. In Series B and C, using uncooked, cured ham, approximately 60 or 6000 cells per gram of ham loaf were added respectively. For Series D, in which cooked, cured ham was used, the inoculum was approximately 6000 cells per gram of ham loaf. For the bacteriologic analysis of these three series, one 10-gm. sample was removed from the uninoculated, ground mixture, a second 10-gm. sample was taken immediately after the inoculum had been stirred into the mixture, and a third 10-gm. sample was removed after cooking. The analysis was done as for Series A.

All poured plates were incubated at 37°C. for 48 hr., then counted, and the results recorded.

Ham Croquettes

Ham croquettes were prepared using uncooked, cured ham and an inoculum of approximately 6000 cells of *M. pyogenes* var. *aureus* per gram of ground mixture. The same proportion of ingredients was used as for the ham loaves. The croquettes were formed by weighing out 75-gm. portions of ham mixture and shaping them with sterile spoons into round balls. Each portion was rolled in bread crumbs, then in an egg-and-water mixture, and finally in bread crumbs. The croquettes were then placed in deep fat heated to 191°C., and cooked for 2 min., a time established to give them a deep golden brown color. Immediately after removal from the fat, the temperature was taken by placing a thermometer in the center of each croquette.

Samples weighing 10 gm. were removed from the uncooked, uninoculated ground ham mixture, from the uncooked inoculated mixture, and from the cooked croquette. All samples were analyzed bacteriologically in the same way as were the samples from the ham loaves.

Analysis of Microbial Variation in Boneless Rolled Hams

A preliminary bacteriologic examination of the ingredients used in preparing the ham loaves and ham croquettes revealed that the variation observed in microbial content of the ground ham mixtures was due to the ham rather than the other ingredients. To further examine this observed variation in the viable cell content of ham, samples were taken at regular intervals throughout the length of boneless, rolled hams and were analyzed for bacterial content.

Each ham was completely subdivided by cutting it with a sterile knife into slices 1⅛ in. thick. To record the position of the ham slices, they were numbered consecutively, the lowest number being at the shank end of the ham. Each slice was wrapped in aluminum foil and frozen. When the ham slice was to be analyzed, it was removed from the freezer approximately 24 hr. before testing and placed in the refrigerator.

Three samples, weighing about 20 gm. each and extending from the edge to the center, were removed aseptically from each slice of the thawed ham. A cut was made lengthwise through the center of each sample to produce two approximately symmetrical halves, each weighing about 10 gm. One half from each pair was cooked in a 177°C. oven to an internal temperature of 80°C. as measured by a thermocouple. The other 10-gm. sample was left uncooked. Each sample, cooked or uncooked, was mixed with sterile

TABLE 1

The effect of cookery on the bacterial content of ham loaves and ham croquettes (inoculum was* Micrococcus pyogenes *var.* aureus ✻196)

PRODUCT	TYPE OF HAM USED	INOCULUM	UNINOCULATED MIXTURE		INOCULATED MIXTURE		COOKED PRODUCT	
			Total bacteria	Micrococci	Total bacteria	Micrococci	Total bacteria	Micrococci
		cells/gm.	*cells/gm.*†	*cells/gm.*†	*cells/gm.*†	*cells/gm.*†	*cells/gm.*†	*cells/gm.*†
Ham loaf‡	uncooked cured ham	—	400	600	—	—	15	15
Ham loaf ✻	uncooked cured ham	60	100,000	48,500	94,000	45,000	2,400	220
Ham loaf ✻	uncooked cured ham	6,000	210,000	75,000	230,000	85,000	2,100	250
Ham loaf ✻	cooked cured ham	6,000	200	85	6,100	6,800	130	65
Croquettes ✻	uncooked cured ham	6,000	280,000	73,000	300,000	89,000	37,500	27,000

* Internal temperature of cooked ham loaves: 80° C. Mean internal temperature of cooked ham croquettes: 59.3°C.; range: 56°–63° C.

† Numerical results reported in accordance with method outlined by Jensen (10).

‡ Each figure represents the mean value of 15 trials.

✻ Each figure represents the mean value of 8 trials.

saline on a power-driven blender. The resulting suspensions were plated on TGE and SM110 as described previously.

RESULTS

Ham Loaves and Croquettes

Table 1 records the results obtained from the bacteriologic examination of the four series of ham loaves. These results indicate that the cooking of the ham loaves caused a decline in the total numbers of viable bacteria, and in the probable micrococci count. The data show that mixtures with a high initial count of cells produced loaves with a large number of surviving bacteria. In no case did cooking completely destroy the micrococci present in any of the ground ham mixtures.

The data acquired from the bacteriologic analysis of ham croquettes are also presented in Table 1. The mean values of cells per gram in the uncooked, uninoculated croquettes were comparable to those found in Series C of ham loaves, but the mean values of cells per gram in the cooked croquettes were considerably higher than in any of the series of ham loaves. The range of internal temperatures for the croquettes was only 56 to 63°C., with a mean internal temperature of 59.3° C.

The results of this study indicate that the number of microorganisms that survived cookery depended on the number present in the uncooked ham mixture, i.e., the more bacteria in the uncooked loaf or croquette, the more survived the cooking process. It is also evident that there was a great range in total numbers of bacteria and micrococci among the ham mixtures.

Bacteriologic Analysis of Boneless Rolled Hams

The findings of the studies which considered the possible relationship of the position of a slice within the ham to the total number of viable cells and the probable number of micrococci present are indicated in Figure 1. Shown are the logs of approximate numbers of total bacteria and of probable micrococci per gram of ham slice, both uncooked and cooked, for two boneless rolled hams. That there may be a large variation from one slice to another is evident. There is perhaps some slight trend toward a greater concentration of viable bacterial cells in the center slices as compared with the end slices. Products made from the ham in the center slices, then, would perhaps tend to contain a greater number of bacterial cells than products prepared from end slices. In many cases, however, common practice would indicate that end slices rather than center slices are used for "left-over" dishes.

Packing Processes

Table 2 compares the total numbers of bacteria and probable micrococci found in ground ham mixtures prepared from ham processed by two

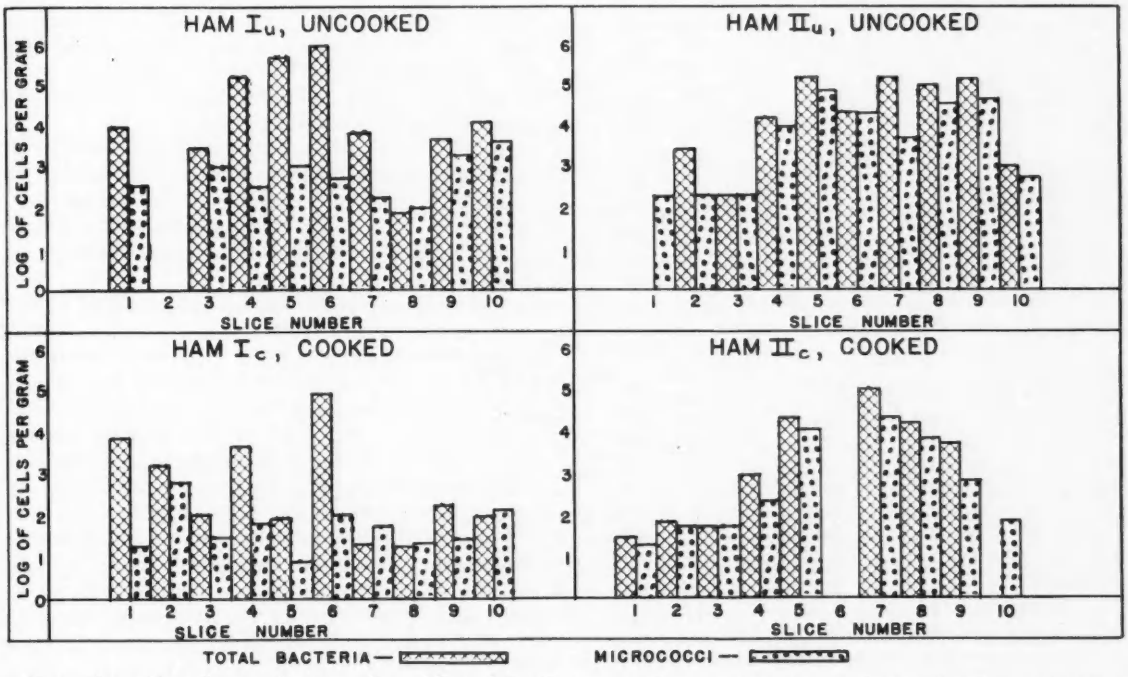

FIG. 1. *Logarithm of approximate numbers of bacterial cells per gram in uncooked and cooked cured, boneless, rolled hams as affected by position of the slice in the ham.*

different packers. This analysis included portions of six different hams, three from each packer. The mixtures prepared from the hams of Packer *N* showed a much greater range in total viable cells (140 to 925,000 cells per gram) than did mixtures made from the ham of Packer Y (25 to 68,000 cells per gram). These figures suggest that the process used by Packer N allowed the survival of more bacteria, both of total viable cells and of micrococci, than the process of Packer Y. It would, therefore, seem that the ham loaves or croquettes prepared from the ham of Packer N would be more apt to have a greater number of cells surviving after cookery, than those products made with the ham processed by Packer Y.

TABLE 2

Variation in total microbial count and count of probable micrococci in ground meat loaf mixtures prepared from boneless, rolled, cured hams processed by two packers

SAMPLE	PACKER N		PACKER Y	
	Total bacteria	Micrococci	Total bacteria	Micro-cocci
Ham No. 1				
	*cells/gm.**	*cells/gm.**	*cells/gm.**	*cells/gm.**
1	—†	190	1,050	1,900
2	140	145	110	155
3	—†	345	25	45
4	1,800	2,200	370	50
5	22,000	24,500	25	40
6	730,000	360,000	100	60
7			45	25
Mean	188,485	64,563	246	325
Ham No. 2				
1	195,000	120,000	1,650	1,800
2	725,000	44,000	40	65
3	130,000	88,000	—†	1,500
4	530,000	34,500	61,500	7,350
5	84,000	5,050	68,000	1,550
6	125,000	8,700	44,000	185
7	190,000	12,850	40	155
8	240,000	155,000	135	440
Mean.....	277,375	58,512	25,052	1,631
Ham No. 3				
1	535,000	155,000	80	170
2	125,000	725,000	160	205
3	140,000	115,000	30	50
4	280,000	140,000	30	40
5	925,000	530,000	35	40
Mean.....	401,000	333,000	67	101
Mean for three hams.	292,821	132,657	9,338	791

* Numerical results reported in accordance with method outlined by Jensen (10).

† Overgrown by spreaders.

DISCUSSION

The data offered here confirm earlier reports in the literature that a wide variation in the number of viable cells found in whole or ground ham is not unusual. Brewer (3) found an average of 327,425,000 microorganisms per gram in ground ham, and he stated that cocci were predominant. Black and Lewis (4) reported that the raw hams they analyzed contained 0 to 750 bacteria per gram. McDivitt (5) found cocci present in ham ranging from 892 to 887,380 cells per gram.

Other work has shown micrococci to be present in ham or ham products after cooking. Causey and Fenton (6) prepared ham patties, cooked them, froze them, and then reheated the patties to 82 to 85°C. internal temperature. They reported that the average bacterial plate counts were low, but indicated that they found Micrococcus strains, some of which were coagulase positive. McDivitt (5) found up to 4000 cocci per gram surviving in ham that had been baked to an internal temperature of 77°C.

Certain factors in ham may account for the high resistance of micrococci to heat. First, there has been evidence presented to suggest that the high salt content of ham affects the thermal resistance of some strains of micrococci. Stritar (7) found that toxin-producing strains of *M. pyogenes* var. *aureus* increased in resistance to heat when grown in pork to which a curing solution had been added. He further demonstrated that this increased resistance was due to the salt present in the curing mixture. In a limited number of studies, McDivitt (5) isolated micrococci from milk and cultivated them in a broth containing the ingredients of pickling brine. Her results suggested that micrococci so cultivated exhibited increased thermal resistance.

Another factor which might affect the survival of micrococci in ham loaves and croquettes is the fat content of the ham. Yesair *et al.* (8) found that micrococci in a fatty medium showed a much greater resistance to heat than those heated in a moist medium without fat.

A third explanation which can be offered in the case of the ham croquettes is the low internal temperature achieved during cookery. Hussemann and Tanner (9) found that in cream fillings which have neither a high-salt nor high-fat content, food poisoning micrococci could survive between 3 and 4 min. at 75°C. It would, therefore, have been expected that micrococci could have survived for 2 min. in ham croquettes at temperatures of 56 to 63°C.

Certain difficulties in technique were encountered. When the ground ham mixtures having a high initial bacterial content were inoculated with 60 or 6000 cells of *M. pyogenes* var. *aureus* per gram of mixture, the plate counts for the inoculated mixture were often lower than those for the uninoculated mixture. A possible explanation might be that the

ham was rather coarsely ground, and when the ham contained large numbers of bacteria, one 10-gm. sample might not contain the same number of microorganisms as another 10-gm. sample. Another difficulty was evidenced when some micrococci counts appeared larger than the total bacteria counts for the sample, perhaps attributable to the limitations of the plate count method for quantitative measurement.

It would appear then, that food poisoning micrococci, whether in the ground ham itself or added by a food handler, can survive the cooking procedures used for ham loaves and ham croquettes. Therefore, storage of these products at proper temperature to prevent the growth of any possible micrococci present either previous or subsequent to cookery would appear to be urgent.

CONCLUSIONS

Ground ham mixtures were analyzed for bacterial content both before and after cooking as meat loaves or croquettes. All these mixtures were shown to have micrococci present in their natural bacterial flora. An inoculum of a food poisoning strain of *M. pyogenes* var. *aureus* was added to many of the mixtures before cooking. Bacteriologic analysis revealed that while cooking reduced the number of viable cells, including micrococci, in no case did it destroy them all. The number of cells surviving cookery appeared to depend on the concentration of bacterial cells in the uncooked mixture. Ground ham mixtures which had a very high microbial content originally, usually continued to contain a large number of cells after cooking.

A comparison of uninoculated ground ham mixtures prepared from hams processed by two different packers indicated that one process appeared to allow the survival of a great many more bacteria than another. The position in the whole ham may partially account for the number of viable cells in the ground ham mixture, as a greater number of bacteria tend to be present in the center slices than in the end slices.

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World Consumption of Fruits and Vegetables

Consumers the world over are devoting a large percentage of their spending on fruits and vegetables, according to the *Monthly Bulletin of Agricultural Economics and Statistics* of the Food and Agriculture Organization of the United Nations. In the U.S., in 1952, fruits and vegetables accounted for 21 per cent of total food purchases, and in 1953, the United Kingdom imported fruit and vegetables—fresh and processed—totalling the equivalent of $345 million, or 12.3 per cent of total food imports, excluding beverages. In West Germany, these foods represented 23.6 per cent ($257 million) of total food imports.

"Only in the U.S. and the United Kingdom does the per caput consumption of all fresh fruit show a decrease, but in the U.S., this is more than compensated for by the increase in consumption of canned fruit, fruit juices, and frozen fruit." For example, consumption of frozen fruit rose from about ½ lb. per person in 1934–38 to 14 lb. in 1952.

The FAO *Bulletin* reports that the trend continued on the European continent in 1953, when imports, especially citrus fruits and bananas, expanded further. Production in 1951–53 surpassed the prewar average by nearly 50 per cent for oranges and tangerines, 40 per cent for grapefruit, and some 35 per cent for other fruit, "and the trend is clearly upwards owing to new plantings in past years and better cultivation practices. In particular, many of the younger citrus groves have not yet reached full productivity and will add heavily to production over the next five to ten years."

Ascorbic Acid and Sodium Chloride Content of Commercially Canned Tomato Juice[1]

E. E. ANDERSON, Ph.D., I. S. FAGERSON, Ph.D., K. M. HAYES, and C. R. FELLERS, Ph.D.

Department of Food Technology, University of Massachusetts, Amherst

LITTLE was it realized 125 years ago when Colonel Johnson publicly consumed the first tomato, reputed at that time to be a poisonous "loveapple," that a product of its manufacture, namely tomato juice, would be the most popular of all canned fruit or vegetable juices.

In 1951, more than 36 million cases of tomato juice were canned, with the packs of its nearest competitors (canned orange and pineapple juices) amounting to only 58 and 34 per cent of this figure.

At present, canned tomato juice is consumed in many American homes as a pre-meal appetizer or to provide variety from the customary citrus fruit or juice. Reputed to be an excellent source of ascorbic acid, if properly processed and stored, it was considered of interest to determine the amount of this vitamin present in the more popular commercial brands of tomato juice as purchased at the retail market level.

Also, in view of the current interest in dietetic foods as well as the prescription of carefully regulated intakes of sodium in certain cases of hypertension, the sodium chloride content of these samples was determined.

In some early work on the anti-scorbutic value of tomato juice, Fellers, Clague, and Isham (1) reported that the daily protective dose for the prevention of scurvy in guinea pigs in five samples of commercially canned tomato juice varied from 2.0 to more than 6.0 gm. Maclinn, Fellers, and Buck (2) analyzed niney-eight strains and varieties of tomatoes grown in Massachusetts and found their mean values to range from a low of 0.13 (± 0.03) mg. per gram to a high of 0.44 mg.

Clifcorn (3) reported that the over-all effect of canning tomato juice was to reduce the amount of ascorbic acid originally present in the tomatoes by approximately 31 per cent. Storage up to twelve months at room temperature and at 98° F. caused additional losses of 9 and 39 per cent, respectively. A later report by Clifcorn and Peterson (4) revealed that in 1943 the National Canners Association in California found the ascorbic acid retention in tomato juice to vary from 11 to 81 per cent, with an average of 63 per cent. However, it was noticed that in certain plants utilizing proper canning equipment and recommended processing techniques, 94 per cent of the ascorbic acid was retained.

It has also been reported (5) that the ascorbic acid content of canned tomato juice varied from a low of 1.5 mg. to a high of 30.0 mg. per 100 gm.

In a survey of combined data from the 1942 and 1943 packs, Cameron and Esty (6) reported an average value of 14.4 mg. ascorbic acid per 100 gm. canned tomato juice; this figure represents an average retention of about 67 per cent of the original amount of ascorbic acid with a range of from 35 to 90 per cent.

Obviously, there are variations in the ascorbic acid content arising from different varieties of tomatoes as well as from differing manufacturing methods. Somers, Hamner, and Kelly (7) also showed that even within a given variety of tomato, the ascorbic acid content of fruit grown in the shade was less than that of comparable fruit grown in the sunshine.

Hand *et al.* (8) in a four-year study on different varieties of tomatoes, reported that within a given year little if any difference existed in the ascorbic acid content of tomato juice prepared from tomatoes that were graded either U. S. No. 1 or No. 2. However, in 1949, No. 1 and No. 2 tomatoes of the Red

[1] Contribution No. 951, Massachusetts Agricultural Experiment Station. Received for publication May 19, 1954.

Jacket variety contained from 19.5 to 19.7 mg. ascorbic acid per 100 gm. canned juice; in 1952, they contained only 13.5 to 14.3 mg. per 100 gm.

In a report on the salt content of various foods, it was estimated (5) that there are 90 mg. chloride (as sodium chloride) per 100 gm. tomato juice. Clifcorn (9) reported that canned tomato juice contained from 5 to 10 mg. sodium per 100 gm. If reported as sodium chloride, these figures would be increased to 12.5 to 25 mg. per 100 gm.

In the commercial preparation of canned tomato juice, Cruess (10) stated that salt is usually added at the rate of 4 to 6 lb. per 100 gal. juice. This would mean the addition of approximately 0.48 to 0.71 per cent salt to the naturally occurring salt content.

EXPERIMENTAL PROCEDURE

As a result of a market survey, forty of the most popular brands of commercially canned tomato juice were selected for this study. One can or bottle of each brand was purchased in each of six cities so that there were at least six samples for each brand. Thirty-nine lots were canned in No. 2 or No. 3 (46 oz.) cans, and the fortieth lot of six samples represented an all-glass pack. After purchasing, the samples were sent to this laboratory for the ascorbic acid and salt analyses.

Representative samples from each of the six samples of a given brand were weighed into tared Erlenmeyer flasks containing a standard amount of 0.25 per cent oxalic acid buffer solution. After careful mixing, the contents were filtered, and 1-ml. aliquots of each sample pipetted into optically matched colorimeter tubes. The reduced ascorbic acid content was then determined by means of an Evelyn photoelectric colorimeter in accordance with the Loeffler and Ponting modifications of the Evelyn method as outlined by Tressler and Evers (11). Inasmuch as Mills, Damron, and Roe (12) had previously reported that the dehydroascorbic acid content of two samples of five-year-old canned tomato juice was only 0.0 and 0.7 mg. per 100 gm., it was felt that the omission of the dehydroascorbic acid values in the present study would not materially influence the total ascorbic acid value of canned tomato juice.

Analyses for chloride (as sodium chloride) were carried out in accordance with standard procedure of the Association of Official Agricultural Chemists (13). Representative aliquots of the tomato juice were filtered, and 10-ml. aliquots of the filtrates were titrated in porcelain casseroles with standard silver nitrate solution using potassium chromate as an indicator. The results of these determinations are given in Table 2.

RESULTS

From the 240 values presented in Table 1, it may be seen that the reduced ascorbic acid contents ranged from a low of 1.8 mg. to a high of 29.3 mg. per 100 gm. canned tomato juice, with an over-all average of 15.6 mg.

It is of interest to note that the Council on Foods and Nutrition of the American Medical Association allows the use of its seal on canned tomato juice which contains at least 17.5 mg. ascorbic acid per 100 ml. at the time of packing (14). Thus, according to this study twenty-nine of the forty brands examined would fail to qualify for this seal of approval. However, if the loss of ascorbic acid in these samples averaged only 1.5 mg. per 100 ml. during storage, i.e., from the time of packing to the date of our

TABLE I

Reduced ascorbic acid values of forty brands of commercially canned tomato juice

BRAND	REDUCED ASCORBIC ACID		
	Low	High	Average
	mg/100 gm.	*mg/100 gm.*	*mg/100 gm.*
1	7.8	9.9	8.5
2	7.4	9.3	8.7
3	1.8	13.6	9.0
4	6.2	14.4	10.0
5	8.7	11.9	10.2
6	6.2	16.2	11.0
7	10.4	12.0	11.0
8	11.9	12.9	12.6
9	11.2	15.6	12.7
10	7.3	17.8	12.8
11	10.1	18.9	13.8
12	11.5	16.0	14.1
13	13.4	17.7	14.6
14	12.7	16.1	14.7
15	13.1	17.5	14.8
16	11.6	16.4	14.8
17	10.6	18.9	15.1
18	10.7	18.1	15.2
19	10.3	25.0	15.3
20	13.6	18.0	15.8
21	10.2	25.2	16.0
22	14.4	18.0	16.3
23	13.4	19.7	16.5
24	12.0	22.5	16.5
25	12.1	22.9	16.7
26	14.1	19.3	16.7
27	8.2	25.3	16.9
28	15.7	18.8	17.0
29	15.3	19.7	17.0
30	13.2	22.1	17.6
31	14.5	21.8	17.9
32	11.3	25.9	18.2
33	17.2	22.2	18.7
34	14.5	22.5	18.8
35	8.6	24.7	18.8
36	16.5	23.6	19.8
37	13.6	24.3	20.4
38	20.0	22.2	21.0
39	20.4	27.4	25.2
40	21.8	29.3	25.7
Over-all average..			15.6

TABLE 2

Sodium chloride content of commercially canned tomato juice

BRAND	SODIUM CHLORIDE		
	Minimum	Maximum	Average
	gm./100 cc.	*gm./100 cc.*	*gm./100 cc.*
3	0.61	0.70	0.66
29	0.52	1.21	0.70
4	0.64	0.84	0.72
19	0.62	0.96	0.74
32	0.71	0.85	0.77
31	0.54	0.86	0.78
11	0.64	1.04	0.80
22	0.74	0.88	0.80
21	0.59	1.00	0.81
40	0.71	1.06	0.82
37	0.71	1.01	0.84
14	0.78	0.91	0.84
12	0.81	0.90	0.85
27	0.62	0.96	0.87
33	0.81	0.95	0.87
34	0.81	1.00	0.87
31	0.77	1.15	0.89
38	0.71	1.01	0.90
9	0.86	0.92	0.90
1	0.88	0.95	0.90
18	0.81	0.95	0.90
5	0.89	0.93	0.91
39	0.89	0.93	0.92
30	0.89	0.95	0.92
24	0.76	1.04	0.93
25	0.84	1.10	0.94
6	0.92	1.00	0.95
28	0.80	1.20	0.96
26	0.96	1.01	0.96
15	0.92	0.99	0.96
35	0.96	0.96	0.96
17	0.96	1.00	0.98
2	0.92	1.12	0.99
36	0.90	1.06	1.01
7	0.98	1.07	1.05
20	0.99	1.09	1.05
23	1.03	1.14	1.06
8	0.90	1.36	1.06
13	1.06	1.12	1.10
Over-all average..			0.89
Special pack*....	0.11	0.15	0.13

* Special laboratory pack of unsalted, canned tomato juice.

examination, then twenty of the forty brands would have qualified for the A.M.A. seal.

The relative merits of glass compared to tin-packed tomato juice could not be determined by this study. Although all samples of brand No. 8 were glass packed and averaged only 12.6 mg. per 100 gm., two samples of brand No. 33 were also glass packed and averaged 17.4 mg. per 100 gm.

To provide the adult minimum daily requirement of 30 mg. ascorbic acid specified by the U. S. Food and Drug Administration (15), an individual would need to drink more than 1½ qt. of the sample with the lowest content of ascorbic acid, but just slightly more than a 4-oz. glass of the sample with the highest content.

The reasons for the rather wide variations in ascorbic acid contents obviously could not be ascertained without knowing the history of the samples. Tressler and Joslyn (16) cited the National Canners Association, Can Manufacturers Institute Nutrition Committee, as giving the following causes for the major destruction of ascorbic acid in canned tomato juice: (a) excessive incorporation of air into the tomato juice, (b) holding tomato juice containing air at high temperatures for more than a few minutes, and (c) contamination of the tomato juice with certain metals, especially copper.

The results from the analyses for chloride are given in Table 2. Of six samples of canned, unsalted tomato juice prepared in this laboratory, the average, for the particular variety of tomato utilized was 0.13 per cent sodium chloride. Thus, by subtracting this figure from the lowest average salt content of 0.66 per cent in brand No. 1 and from the highest average value of 1.10 per cent in brand No. 39, it would appear that the amount of salt added to the commercial samples examined ranged from about 0.53 to 0.97 per cent. These results appear to be in good agreement with those reported by Cruess (10).

SUMMARY

Determinations of the amount of reduced ascorbic acid in 40 leading brands (240 samples) of commercially canned tomato juice indicated an over-all average of 15.6 mg. and a range of from 1.8 to 29.3 mg. per 100 gm. juice.

Sodium chloride determinations revealed that the amount of salt added to these samples varied from a low of 0.53 to a high of 0.87 per cent.

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BIOGRAPHICAL NOTES ON THE HISTORY OF NUTRITION

Gerrit Jan Mulder—December 27, 1802–April 18, 1880

Mulder's name will always be remembered in the history of nutrition for the introduction of the term, "protein" (1838). He derived this word from the Greek *proteios*, meaning first, and used it to refer to the complex nitrogen-containing substances found in plant and animal tissues. He had been carrying on extensive analytical studies on silk, blood fibrin, egg albumin, serum albumin, and gelatin and found that after certain chemical treatments, he obtained the same type of substance from each of the albuminous materials. He, therefore, concluded that all contained the same root-substance. The word, "protein," was suggested to him by Berzelius, the great Swedish chemist. Liebig, at first accepted Mulder's theory of proteins, but later condemned it in scathing terms.

While Mulder's basic concept of protein composition was incorrect, he did show that "protein" contained 16 per cent nitrogen, and much of his work is better appreciated today than when Liebig dominated the field of agricultural chemistry.

Gerrit Jan Mulder (registered at birth as Gerardus Johannis) was born December 27, 1802, in Utrecht in the Netherlands. His father was a surgeon and wanted his son to follow his profession. He studied medicine at the University of Utrecht and obtained his degree in medicine and pharmacy in 1825. He practiced medicine in Rotterdam and taught in the medical school there, his subjects being: chemistry, pharmacy, pharmacology, botany, materia medica, zoology, geology, minerology, and physics. While these subjects covered nothing like the scope they do today, the burden of work was nevertheless enormous and he suffered a breakdown in 1835. While recovering, he became interested in chemistry and laboratory work and trained himself in this field and became a most careful and accomplished experimenter.

Proust had obtained impure leucine in 1819, but in 1839, Mulder obtained this amino acid in almost pure form and gave it the correct formula; he also worked out the correct formula for glycine. Mulder was appointed Professor of Chemistry at Utrecht in 1840, where he remained until illness forced him to retire in 1868. He was an outstanding teacher, and his pupils adored him. He had many friends, but he also made enemies because of his irritable and combative disposition. Mulder had a phenomenal memory, perseverance, and great intelligence, and he tried to study every side of each problem rather than to establish a doctrine. His writings stimulated research by others. He produced twenty books on agricultural chemistry and other subjects and founded a scientific journal which, however, lasted only through six volumes (1833–38).

Mulder was keenly interested in human nutrition. In 1847, he published what were probably the first nutritional standards which were based on his study of rations for the Netherlands army. He proposed 100 gm. protein daily for a laborer, and less, 60 gm., for a sedentary worker. He also advocated that nutrition be taught in the ordinary schools, but in this he was far ahead of his times.

Mulder's last years were lonely ones; he was blind, suffered from heart disease, and was separated from his wife and children. He died on April 18, 1880, in a village near Arnhem.

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Editorial

Copher Award Presented to Lillian Storms Coover

The Annual Banquet of The American Dietetic Association is the occasion for bestowing honors on members for outstanding contributions to the profession of dietetics. The highest award which the Association gives is the Marjorie Hulsizer Copher Award made possible some years ago by two anonymous gifts to the Barnes Hospital. The recipient of this honor is chosen by the Executive Board of The American Dietetic Association on the recommendation of the Awards, Scholarship and Loan Fund Board, as well as the advice of the Director of Barnes Hospital.

This year, Lillian Storms Coover, Ph.D., Past-President of the Association, was selected for this signal honor. In making the presentation at the banquet in Philadelphia on October 29, Grace Bulman, President of the Association, said:

> One of the most impressive moments during each Annual Meeting has arrived—the presentation of the Marjorie Hulsizer Copher Award. Most of us are familiar with the establishment of this award in 1944 through funds given to Barnes Hospital, St. Louis, to perpetuate the professional achievements and strength of personality of an outstanding dietitian. Each year this highest honor that our Association can give is conferred upon one of our members in recognition of distinguished service to the profession of dietetics.
>
> Let us turn back the pages of memory to 1950, when our annual meeting was held in the nation's capital. We can recall the President-Elect of that year as she came forward to accept the gavel, symbol of her office as 34th President of The American Dietetic Association. To this new responsibility, she brought a wealth of attributes and skills. Born into a family of teachers and scholars and real people, she was provided with a background for making the truly remarkable person her countless friends and professional associates know her to be. She has pursued many interests in extensive world travel, education, research, teaching, writing, and fascinating hobbies. In addition, a keen attention to knowing and serving people has further enriched her life. All this, Lillian Storms Coover, one of our most esteemed members, has shared so generously as a professional leader and a public-minded citizen.
>
> The award carries with it a fitting tribute written by Dr. E. Neige Todhunter, a friend of long standing and close associate during Dr. Coover's early teaching days in New Zealand. I am happy to read Dr. Todhunter's words which express so well the high regard and admiration all of us feel for this year's recipient of the award:
>
> > Lillian Storms Coover, in recognition of her devoted service to The American Dietetic Association and her contribution to its organization, professional advancement, and formulation of its Code of Ethics. Her achievements as teacher, research worker, and nutrition consultant; her charm and grace of personality; her concern for the success of others; and her breadth of interests, clear thinking, and high professional standards will continue to be an inspiration and stimulus to all in the field of dietetics.

Other A.D.A. Awards for 1954

Marjorie McKinley, who is studying for her doctorate at Iowa State College, was the second A.D.A. member to be honored at the Annual Banquet of the Association, when she received the Mary Swartz Rose Fellowship for 1954–55 from Dr. Charles Glen King, Scientific Director, Nutrition Foundation, Inc. Dr. King, in making this presentation, recounted the historical background which led up to the establistment of this Fellowship in 1949. In that year, the Nutrition Foundation voted unanimously to make a grant to The American Dietetic Association in recognition of the work of dietitians in furthering and improving the nutrition of the nation, at the same time honoring an outstanding person in the field. The name of Mary Swartz Rose was chosen, for it was felt that her accomplishments would personalize the spirit of the award designed to symbolize the ideals of our profession, at the same time inspiring the recipients of the Fellowship in their graduate work.

Recipient of the third honor at the Annual Banquet of The American Dietetic Association in Philadelphia on October 29, 1954, was Alice L. Wood, whose essay on "The History of Artificial Feeding of Infants" was judged best of the fifteen submitted this year. In making the presentation, Mary Pascoe Huddleson, former Editor of this Journal, said:

> With enthusiasm and pride we note the continuing progress of the latest addition to the national annual awards now granted by this Association. I refer to the Lydia J. Roberts Essay Award sponsored by your Committee on the History of Nutrition and Dietetics, and made possible in 1952 by a generous five-year grant from the Gerber Products Company. This evening we confer the third of these awards with its attendant $500 honorarium.
>
> Like the Mary Swartz Rose Fellowship, this award serves to honor and commemorate the name of a devoted teacher and a noted scientist, Dr. Lydia J. Roberts, and to strengthen further those cultural values and sentiments without which our technical advancements are cold and colorless. Noteworthy, too, is the fact that both Dr. Rose and Dr. Roberts were distinguished for their basic research and teaching directed toward the nutritional betterment of infants and children—Dr. Roberts during her long tenure as Chairman of the Department of Home Economics of the University of Chicago. Incidentally, both also enjoyed that somewhat rare distinction, for women—membership on the American Medical Association's Council on Foods and Nutrition.
>
> The sagacity of those who devised this essay award is evident when we note the intensified need for the sharp,

clear transfer of ideas in speech and in writing. Chiefly in writing which is concerned with our further enlightenment in science and the cultural arts, do impartial thought and honesty of purpose appear. Through historical research we may also acquire that discrimination and balance which enable us to proceed with caution, better able to digest the mass of information bombarding us from press, radio, and television. Like the ancient Greeks, we shall find a gentle preoccupation with the past, now and then, protective against today's alarms.

When we delve into the classics of a more leisurely and thoughtful past, we become liberated from the mechanized wording of the present. A noted professor of English says that we live in an age of jargon brought on by this technical era—an era when things, especially gadgets, control the language we use; whereas in a more rational order, the words should control the things. For instance, a man makes jottings of his thoughts; when he *thinks* he has enough on one topic he "folderizes" them—or better still puts them in their proper "frame of reference." Lest he be left behind in the race for prestige, all his common acts must suggest a technical process; thus he "contacts," "funnels," and "processes" toward a kind of moral and intellectual chaos. Milton, three hundred years ago, in one of his *Famous Epistles*, showed the intimate relationship of good language and sound politics. Written in Latin, a dead language, he could be assured his words would stay put!

An awareness of this robot-like threat to our mother tongue should arouse the high praise of Dr. E. Neige Todhunter and Adelia Beeuwkes, so largely responsible for a back-to-a-better language trend evidenced in the activities of the Committee on the History of Nutrition and Dietetics, as well as in their own literary contributions.

Alice Lincoln Wood, recipient of the 1954 Essay Award, is a graduate of the University of Wisconsin whose vocation is dietetics, her avocation literature expressed in her own creative writing. Her interests therein are liberal—ranging from compositions with *Gourmet* appeal to a proposed book on prenatal diet; one on the child, his care, and food in human history; and a script for puppet shows with nutrition as its theme. Her years as an Army dietitian were followed by a master's degree at the University of California, further study at Michigan State College, and more recently at Columbia University where a doctorate appears her objective.

In her highly readable essay on the history of the artificial feeding of infants, based on a study of nearly one hundred references, she takes us on a fascinating journey to 2000 B.C. and back through the centuries. Like beacon lights appear the names of many known in our time: Mary Swartz Rose, 1919, among the first to advocate strained orange juice for infants; Hess of New York, 1920, the first to make a mass attack on rickets; Marriott of St. Louis, 1927; and Amy Daniels who in 1938 detailed the role of thiamine and riboflavin in the growth of infants. Miss Wood succeeds, as do all good historians, in making the past come alive. Her story reminds me of the key words of a currently popular television program which portrays great events in history: "the day is like today, all things as they were then, and *you* are there!"

The Mystery of the Blue Bread

In Jerusalem recently, a tall American from Kansas City, wearing rimless spectacles, entered the kitchen of a hotel to carry out a baking experiment. Perie Rumold was trying to solve the "mystery of the blue bread of Bethlehem."

For some time, Palestinian refugees in Bethlehem had been complaining that their bread was blue, and they suspected the flour was to blame. The problem was serious, since almost 75 per cent of the refugee's daily ration (1600 to 1700 calories) is made up of flour. Monthly flour rations for the almost 900,000 displaced Palestinians are bought and distributed by the United Nations Relief and Works Agency, and the refugees, scattered over four countries of the Arab world, pay close attention to the flour UNRWA gives them. When they insisted the flour was contaminated and was turning their bread blue, Mr. Rumold, who is Chief of UNRWA's Quality Control Division, had to find out if this were true.

In his experiments in the Jerusalem hotel, he used two kinds of yeast—one a commercial dry yeast bought in Beirut, Lebanon, the other a local yeast from Bethlehem. When the loaves were baked, he found that those leavened with the Bethlehem yeast had a "slate blue color." The other yeast produced bread of normal color.

Later that morning, the specimens of bread were taken to Bethlehem and shown to a sizeable group of *muktars* (headmen) and others interested in the problem. Mr. Rumold explained what he had done, but the refugees' leaders refused to believe that the flour was not at fault and rejected all suggestions that the yeast or the baking process had caused the blue color. Then Mr. Rumold repeated the test in front of the gathering, this time using three yeasts—one from Beirut, one presented by a muktar, and one brought from the nearby home of a refugee selected at random. The loaves were all of a satisfactory color. But the spokesmen persisted, maintaining the bread would turn blue overnight. So, it was carefully stored and the next day, the same group examined it and found it still normal in color.

The refugees then grudgingly admitted that the flour was acceptable, and the distribution of monthly rations, which had been delayed by the blue bread mystery, was resumed. To prevent a recurrence of the mystery, UNRWA officials decided to make up new yeasts and distribute them to those who wanted them.

Later, Mr. Rumold was reluctant to say what had caused the blue color. It might have been the yeast, or possibly the baking methods—or certain types of flour used with certain types of yeast might produce the blue bread. His search for the answer is continuing. Already, he had succeeded, with the help of Dr. R. M. Dowdeswell of the American University Hospital in Beirut and the advice of Dr. I. VanVeen of the World Health Organization, in reproducing the blue bread. The solution to the mystery, it is hoped, will be found soon.

Current Comment

Adequate Therapeutic Diets[1]

W. H. SEBRELL, JR., M.D.
Director, National Institutes of Health
U. S. Public Health Service
Bethesda, Maryland

In discussing nutritional therapy, I feel a deep responsibility to the members of a very efficient team: the nutritional scientist, the practicing physician, and the dietitian who places the findings of the first at the disposal of the second. It is you who apply and extend the scientific information that makes effectual dietary treatment possible.

The present status of therapeutic nutrition can best be understood and evaluated if viewed in historical perspective. It is a dynamic field—one that changes rapidly as new concepts and materials are tested, modified, and crystallized in practice. Much that we learn today may not be final, but it will surely represent progress. In a spirit of open-minded investigation, the dietitian, like the physician and scientist, will continue to further this evolution while directly serving mankind.

HISTORICAL BACKGROUND

We can see in the short span of our own experience a significant trend in therapeutic nutrition—a trend toward increasing rationality of approach, accompanied by growing effectiveness. If we look back twenty-five years, the trend is pronounced and is manifest in many changes. Deficiency diseases, for example, are much better understood as a result of systematic study of patients and laboratory animals. A parallel development has been the identification, isolation, and synthetic production of vitamins and other nutrients, permitting their specific use in the control of disease in individuals and whole populations. The need for a balanced diet, as well as our picture of what constitutes balance, has been clarified and confirmed. This is a concept of fundamental importance in nutritional therapy.

The greater rationality—the tendency to base therapeutic diets on facts rather than opinion, on observation rather than assumption—is most evident in comparing actual practices of yesterday and today. In tuberculosis, for instance, the effort to maintain the patient's weight should not result in obesity. But steps in that direction, by no means extinct, seemed desirable a few years ago, before obesity was widely associated with the early onset of several chronic diseases. Another example is the refinement of diet therapy as nutritional needs are worked out in conditions of nondietary origin, such as alcoholism and the metabolic diseases, like diabetes and gout. In these problems we not only restrict the patient, as in former times, but also supplement his diet in essential and appealing ways.

A major advance of recent years has been the recognition of metabolic effects of stress, as in surgery and other trauma. In the 1930's it was found that many surgical patients were severely depleted in protein, and this was related to poor wound healing and other postoperative problems. Without analyzing such findings, I should like to emphasize their vital importance in relation to the concept of a balanced diet. It is now common to think in terms of supplementing the normal balanced diet in ways specifically designed to compensate for the greater use and loss of nutrients in stress situations. Recent recognition of prolonged convalescence as stress-imposing has contributed to this revolution in postoperative nutrition.

Some well-known diets, though quite experimental, nevertheless constitute rational therapy. These are of two general types. One is the regimen based on knowledge of a metabolic abnormality—for instance, the high-protein diet in cirrhosis of the liver. The other type is based on some unexplained observation reported in enough cases to warrant wide-spread testing. Rice diets in hypertension and cabbage juice in peptic ulcer are familiar examples.

By this brief historical preface, I have tried to show that nutritional therapy as practiced today is derived from a vast and still growing fund of scientific information. We are leaving behind the indifference, the faddism, the empirical approaches that once dominated the field, and have entered a phase in which the therapeutic diet is not only widely appreciated, but critically evaluated and refined. In treating conditions involving stress, this phase is characterized by a trend toward higher levels of supplementation. We shall see that many diets still seem inadequate in this regard.

NUTRITIONAL NEEDS IN ILLNESS

I should like now to discuss generally the nutritional requirements of the sick, injured, and convalescent, with emphasis on acute conditions producing drastic metabolic derangement. The clinician's

[1] Presented at the 37th Annual Meeting of The American Dietetic Association in Philadelphia, on October 27, 1954.

estimate of nutritional need must be based on four general considerations: previous nutritional status of the patient, nature and severity of the disorder, identity and amounts of the nutrients being lost, and probable duration of the illness. Sources of information for these determinations include the patient's history, physical and laboratory examinations, and tests to measure the blood levels or excretion of various nutrients.

The importance of nutritional therapy in trauma and acute illness will be indicated by a listing of the consequences of malnutrition, whether induced by a poor diet or the disorder itself. These include retarded convalescence, impaired tissue growth, increased susceptibility to disease, organ dysfunction and damage, weight loss, edema, anemia, and multiple effects of vitamin and mineral deficiency. Adequate nutritional therapy, on the other hand, not only minimizes these changes, but may reduce significantly the duration of disability.

Certain basic principles concerning the use, needs, and loss of various classes of nutrients will aid in evaluating the adequacy of therapeutic diets. The problem of fluid requirement is essentially typical. A normal adult at rest and not perspiring requires 1800 to 2500 cc. water a day. To this must be added the amount lost because of abnormal excretion, as from fever, vomiting, diarrhea, exudation, and the elimination of waste products. In sick or injured patients, the desire for fluids may not be commensurate with the need. Additional fluids should be administered if there is clinical evidence of dehydration, high specific gravity of the urine, or a daily output of less than 500 cc. urine if fever is absent or twice that amount if present. The physician should inform the dietitian of such determinations, and they should work together closely in planning dietary and parenteral therapy.

CALORIC NEEDS

With regard to energy requirements—second only in importance to those for fluid—it should be stressed that a negative caloric balance in the patient should be controlled as soon as possible. Loss of protein tissue, which usually accompanies loss of weight, may be highly detrimental. Moreover, in the absence of sufficient calories, the body uses dietary and tissue protein for energy rather than repair.

The average adult patient without fever, recovering in bed from a minor injury or illness, requires 2000 to 2500 calories a day. Activity, restlessness, fever, loss of protein, or previous nutritional deficiency increases the caloric demand. For example, a patient may require 10 to 20 per cent more calories if restless, 75 per cent more if severely depleted, and 50 to 100 per cent more if losing protein. Patients with fever, except for some with pulmonary tuberculosis, expend an average of 13 per cent more energy for each degree Centigrade rise in body temperature.[2] A combination of these factors may raise the caloric need to very high levels. For instance, the daily caloric expenditure in a malaria patient with severe chills and fever may reach 5000.

In a patient unable to meet day by day his total nutritional requirements, the deficiency should be promptly replaced. Acutely ill patients must not be stuffed with food, nor should intravenous alimentation be used if oral or tube feeding is practical. In some cases—involving, for example, severe emaciation—any aggressive nutritional therapy is hazardous, since the circulation or metabolic system may not tolerate the extra load. The dietitian must be prepared to meet the sensitive needs of such patients, gradually increasing the quantity and variety of foods.

PROTEIN

Sufficient protein of high biologic value should always be a part of nutritional therapy unless specifically contraindicated, as when kidney impairment would lead to the accumulation of waste products. Administration in the form of natural whole foods or concentrates is preferable. Loss of body protein due to disease or injury can be aggravated by dietary deficiency or bed rest and, therefore, emphasis should be on the prevention of protein depletion. Protein with adequate calories, vitamins, and minerals should be given as soon as the patient's condition permits, and in surgical patients, both pre- and postoperative administration is highly desirable.

The National Research Council's recommended allowances of protein, though adequate for most ambulatory and briefly hospitalized patients, should be increased for routine hospital use. In many conditions, daily administration of 150 gm. is beneficial. This applies to protein depletion prior to treatment; fever for more than ten days; surgery; and lesions causing protein loss, such as burns, or deficient protein formation as in certain liver diseases. Administration of large amounts of protein is quite practical. Through use of concentrated preparations, some patients can consume as much as 300 gm. a day in liquid form. In addition, hydrolysates and other sources of protein are available if the alimentary tract cannot be used.

VITAMINS AND MINERALS

The importance of vitamins in preserving health need not be discussed here, but I shall mention some ways in which sickness and trauma can raise the vitamin requirements. Extra thiamine may be needed to replenish depleted stores, to utilize calories following starvation, or to compensate for diminished biosynthesis of the vitamin due to oral antibiotics. Niacin, like thiamine, plays an important part in

[2] 7.2 per cent for each degree F.

carbohydrate metabolism. Its exact role in stress is unknown, but acute illness or nonspecific stress has been reported to precipitate pellagrous lesions. Niacin and other B vitamins—riboflavin, pantothenic acid, pyridoxine, folic acid, and B_{12}—are involved in protein and energy metabolism and other processes.

Among the remaining vitamins, only ascorbic acid has a prominent place in therapeutic nutrition. It is important in wound healing, detoxification, and the maintenance of intercellular substances, and may play a role in the body's response to stress. After severe burns, ascorbic acid all but disappears from the blood and urine, probably as a result of increased utilization. The prompt restoration of the vitamin is considered desirable.

Vitamin requirements are best met in the following ways. For the patient with a minor illness or injury, a good diet without supplementation will suffice. If the past or present diet is suspected of inadequacy, the physician should prescribe one or two daily tablets of vitamins in maintenance amounts. This should roughly double the Recommended Dietary Allowance. In cases of severe illness, trauma, burns, fractures, or surgery, still larger doses may be prescribed, with emphasis on ascorbic acid and the B vitamins. The physician administering nutrients in therapeutic doses depends on the dietitian for a sound basic diet of prescribed caloric and protein content.

The essential minerals are widely distributed in foods, and any mixed diet will usually provide sufficient amounts for the mildly ill patient. Besides meeting normal needs, however, dietary or parenteral therapy must sometimes compensate for previous depletion or excessive losses. On the other hand, restriction is sometimes prescribed, as in hypertension and nephritis. Particular attention should be given to sodium chloride and potassium. The normal daily allowance for salt is 6 gm.; for potassium 2.23 gm. When these or adjusted amounts are to be given, the physician and dietitian must often plan the distribution between oral and parenteral routes.

Calcium, iodine, and iron, though essential nutrients, are seldom of special concern in short-term illness. For the first two, milk and iodized salt usually suffice but a suitable iron salt must be added to long-continued liquid mixtures. Other essential minerals, such as phosphate, sulphate, magnesium, and trace elements, are rarely added to the therapeutic diet. Requirements in various pathologic states are still unknown.

We must never overlook the fact that an excess of certain nutrients can do serious harm. Vitamins A and D are toxic at high levels. Indiscriminate use of salt and potassium, especially in patients with impaired kidney function, may cause death.

INADEQUACY IN HOSPITAL DIETS

Many therapeutic diets in hospital manuals today are nutritionally inadequate. This is often true of soft, liquid, and bland diets and of postoperative regimens. Moreover, diets from which foods are eliminated should approach as nearly as possible the total metabolic demand. For example, a diet for reduction of weight in hypertension, when there is no kidney problem, should provide sufficient protein; and this should also be said of the fat-free diet used in chronic pancreatitis.

Some familiar diets that are apt to be inadequate may be cited. I might return, for example, to the problem of fever—say, typhoid—and point out that any lingering fears of liberal feeding should be dispelled. A patient with typhoid fever may destroy protein three times as fast as a normal person, and contrary to earlier belief, his diet should be generous in all respects. He should receive as much food as he can digest and absorb—from 3000 to 6000 calories.

A standard regimen in need of revision is the Sippy diet for peptic ulcer. This is calorically inadequate during the first ten days, unduly low in protein, and lacking in ascorbic acid. Rigid adherence to the restrictions once imposed in peptic ulcer is no longer believed necessary. The object should be to alleviate gastric irritability and neutralize the free acid, and this can best be accomplished with a broader diet giving prominence to milk.

Other diseases in which the dietary protein is often too low are those of the kidneys and liver. In the group of kidney disorders known as Bright's disease or nephritis, protein should be prescribed in light of two considerations—the patient's extra need and the possible damaging effects of excessive amounts. A rule followed successfully by many physicians is to meet the normal protein requirement plus the loss in the urine—an average total of about 100 gm. a day. Similarly, the diet in hepatitis and cirrhosis, contrary to former practice, should be high enough in protein to protect and repair the liver. For the average adult male, the diet should contain at least 3000 calories and should emphasize carbohydrate, protein, and B vitamins.

With regard to tuberculosis, I have mentioned the danger of obesity and wish to stress now the importance of abundant vitamins and minerals. Among far-advanced cases, signs of scurvy and vitamin A deficiency are common. Ascorbic acid and vitamin A should be added to the diet if its adequacy is doubted. Liberal but not excessive protein should be provided —100 to 125 gm. daily for the average patient.

In diabetes, an increase in the dietary carbohydrate, though accompanied by sufficient insulin, has been reported to raise the demand for vitamins. The physician, to be on the safe side, may prescribe vitamins, yeast, or crude liver extract. Since the diabetic person's nutrition must vary with the individual, I believe the most useful generalization would be this: consult with the physician regarding adjustment or supplementation of a diabetic diet that fails to meet the daily allowances for a normal person.

In this discussion of diets for specific diseases, a word should be said concerning arthritis and rheumatism. Restriction of calories, purines, and fat is important in gout, but the persistent error that all rheumatic conditions are gouty has led to much unnecessary dieting. Similarly, there is often groundless fear of hypersensitivity, acid foods, and disturbed acid-base balance. In fact, no specific diet of proved value is known for non-gouty rheumatic disease. Nutritional inadequacies, however, should be corrected, obesity controlled, and close attention paid to the diet for various other reasons. This, of course, primarily concerns the physician, but the dietitian can function best if well informed of medical advances.

NUTRIENTS AS MEDICATION

With that in mind, and with a view to rounding out this discussion, I should like to touch on one other aspect of nutritional therapy—the physician's use of nutrients as drugs. I am not referring to the control of familiar nutritional diseases. Pharmacologic studies have yielded much literature, largely controversial, on the effects of nutrients in a variety of disorders apparently unrelated to dietary deficiency. The doses are usually massive compared with dietary needs. As illustrations of promising research leads, I shall mention a few of these pharmacologic effects, beginning with vitamins of the B complex.

Niacin stimulates the secretion of stomach acids and induces dilation of peripheral blood vessels. Because of the latter property, niacin or derivatives are sometimes used in treating vascular disorders, such as frostbite, arteriosclerosis, and certain types of headache.

Vitamin B_{12}, ordinarily injected in minute doses for pernicious anemia, is beneficial at 50 to 200 times those amounts in cranial nerve neuralgias and diabetic neuritis. Spectacular results of B_{12} therapy in neurologic disorders of alcoholism have recently been described. In animal studies, preliminary findings indicate that B_{12} may also promote wound healing.

Among the best-established pharmacologic effects and uses of the other B vitamins are the following. Para-aminobenzoic acid, an essential part of folic acid, reduces the severity of rickettsial infections and maintains the blood levels of salicylates in rheumatic fever. Thiamine is used to stimulate the appetite. Pyridoxine is useful in radiation sickness and the early nausea of pregnancy, and pyridoxine or folic acid has been shown to influence the mortality of irradiated mice.

I must emphasize that some of these claims are unestablished. On the other hand, a broad spectrum of pharmacologic effects has been observed. It is to this fact that I wish to call attention, if only in passing. Undoubtedly, the mechanisms of those effects constitute a promising field for exploration, and one that could yield important practical results.

IMPLEMENTING NEW KNOWLEDGE

When we appreciate the dynamic nature of therapeutic nutrition, as shown by these examples of new knowledge and changing concepts, we see the need for close cooperation in our working relationships. We see that the only fruitful approach is one in which the physician, dietitian, nurse, and other members of the therapeutic team must learn from one another and pool their resources. To augment the team's effectiveness, two efforts, I believe, could be especially productive: first, we should strengthen our communications and, second, follow new developments more closely.

For example, the physician should convey to the patient, in referring him to the dietitian, an accurate impression of the latter's function and capabilities and should also prepare the dietitian with any information about the patient that may be helpful. The dietetic interview is the beginning of a professional and personal relationship on which therapeutic success may well depend, for no diet can serve its purpose unless the patient understands and follows it.

As to the second effort—the attention to new developments—I recommend that the dietitian keep abreast of the progress of nutritional science. Thus the therapeutic team not only brings to the patient the benefits of the latest knowledge, but also participates in nutritional research—in the constant evolution of ideas, as well as the testing and refinement of new materials and techniques.

By these means the practicing physician, through the dietitian's knowledge and skill, will be able to apply specific nutritional therapy to an ever-wider range of health problems and with ever-greater benefit to mankind.

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The Dietitian-Patient Relationship[1]

VIRGINIA VIVIAN[2]

University Hospital
Ann Arbor, Michigan

The hospital dietitian is the link between scientific nutrition and hospital food practices. The value of hospital food practices depends on the kind and amount of food the patient will eat. This in turn hinges frequently on a strong interpersonal relationship between the patient and the dietitian. In large

[1] Presented at the 37th Annual Meeting of The American Dietetic Association in Philadelphia, on October 27, 1954.

[2] Chairman, Project #1, Diet Therapy Section, The American Dietetic Association, 1953–54.

part, her effectiveness is determined by the effectiveness of her relationship with the patient. An awareness of the need to encourage, strengthen, and broaden this interpersonal contact was the inspiration for Project #1 of the Diet Therapy Section of The American Dietetic Association for two years, 1952–53 and 1953–54. The chief aim of this project was to stimulate an exchange of ideas and practices on how best to establish and maintain mutually satisfying rapport between the dietitian and her patient.

Dietitians participating in this project were asked to evaluate and list both the points of strength in their present relationships with patients and the improvements they considered most essential. The recommendations were as follows:

1. Better initial or admission contact with the patient.
2. Institution of a selective menu for all patients.
3. More contact and visiting with each patient.
4. A better organized and integrated teaching program.
5. Increased teaching of normal nutrition to patients.
6. More professional association with the doctors.
7. More participation in team rounds.
8. Better food service, including:
   a. Better trained and more efficient personnel, both professional and auxiliary.
   b. More complete control of service of trays by the dietary department, both delivery and return.
   c. Better defined and enforced dietary policies.
   d. Hotter food.
9. Increased use of class technique for home-diet instruction.

Background information on existing practices was obtained by a questionnaire-type "workshop by mail." The topic was also presented at local and state dietetic meetings, as well as during conferences at the 1953 Annual Meeting of The American Dietetic Association in California. The response indicated not only a high level of interest in the subject, but also the desirability of sharing, through a published report, the suggested and existing methods of establishing better patient relationships.

Knowledge and application of the basic principles of scientific food administration and therapeutic modifications are, of course, fundamental in patient care. But, as Sister Mary Victor has aptly stated (1): "To assure satisfaction as far as the patient is concerned, the dietitian must go further and render what we might call 'devoted bedside dietary care' which is direct application of the dietitian's specialized learning and training to the personal affairs of the patient." By rendering this devoted bedside care, the dietitian can answer the challenge of Dr. English (2): "If the physician would develop a new course of training for the clinical dietitian, she might . . . give support to a dietary regimen which requires frequent patient contact . . . and supply a much-needed interest in the patient's welfare."

INITIAL CONTACT ON ADMISSION

Ninety-five per cent of the 277 responding dietitians agreed that the most important factor in establishing a good patient relationship is a "food-happy" patient who receives appetizing foods that comply generally with his preferences. Personal contact with the patient as soon as possible after admission to discuss his food likes and dislikes is the first step in producing this food-happy atmosphere. Although strongly advocated, we learned that in most hospitals with more than 100-bed capacity this contact with the patient on admission to the hospital was limited. Reasons for this were given as: (a) lack of time and/or personnel, (b) inconvenience of the hour of admission, and (c) the uncertainty involved before the doctor stabilizes his dietary order. Despite these limitations, an effort by the dietitian to welcome and orient each patient ranks high on the list of goals to be achieved.

Some dietitians who cannot visit their patients on admission send a "card of welcome" on the first meal tray. One large hospital uses a printed card wishing the patient a pleasant stay and including a Basic 7 check list for his use in making wise choices of food.

One dietitian reports that in her department, a nutritional history is obtained from every patient, regardless of his dietary order. This history is then used in teaching day-to-day normal nutrition, and where it is pertinent, the information is relayed to the doctor. Its final use may then be in planning a suitable therapeutic diet both for hospital and home use.

In discussing ways to prevent modified diets causing anxiety in patients (3), Mary Brakel describes a sample tray card which introduces the patient to his new diet and tells him he will receive further information about it from the dietitian.

Another dietitian in a small hospital sends each patient a leaflet titled "So You Are Going on a Restricted Diet . . ." One section says, "The doctor has ordered this special diet in connection with your other treatments and medications," and a brief explanation of the physiologic effects of the diet follows. The next section lists foods to be included or avoided. The last page, which may be torn off and returned on the tray, provides the patient an opportunity to list his food likes and dislikes.

FURTHER CONTACTS WITH PATIENTS

All dietitians participating in this exchange of information feel that frequent visiting is a *must* in establishing and maintaining good rapport with patients. The consensus indicates that daily visiting of each patient should be the goal of every dietitian, and fussy problem eaters may require even more attention.

Those dietitians who had no consistent policy for regular patient visiting also indicate the least number of other types of patient contacts. The solution to this situation was clearly defined in one reply, "I need to re-evaluate the use of my time to include some patient visiting and then set about to do it."

Divided opinion exists as to the most effective time for visiting—at mealtime or between meals. The proponents of mealtime visiting insist that more patient interest and interchange of nutritional information is possible when food is visible and being consumed. Furthermore, greater personal satisfaction can be derived by the dietitian when she actually sees food eaten and the patient's response.

Proponents of between-meal visiting believe this to be a more relaxed time to chat with the patients. Divorced from the particular food-emotion, more attention can be devoted to the actual exchange of necessary information.

Dietitians in hospitals with organized medical rounds have further opportunity to promote a strong patient relationship. The patient gains additional confidence in the dietitian's professional authority when he recognizes her as an integral part of the health team.

To supplement team rounds, several dietitians hold weekly conferences to discuss patients' dietary problems with floor supervisors, staff nurses, social workers, and other staff personnel who may be concerned with the patients' welfare. These discussions accomplish the dual purpose of providing total background about the patient for the dietitian as well as acquainting other personnel with the patient's dietary progress and problems.

SELECTIVE MENUS

In about 35 per cent of the hospitals from which reports were received, the selective menu is used. This type of menu requires individualized contact with patients by dietary personnel from the first meal served until the patient is discharged. Coexistent with the use of this menu is the excellent opportunity afforded the dietitian to teach the patient better food habits (4, 5).

The majority of hospitals not using the selective menu *per se* indicated that to a greater or lesser degree patients' food preferences are obtained and recorded on a file card, other office form, or the patient's tray marker. These preferences are obtained primarily by talks with the patients.

EDUCATION OF THE PATIENT

The dietitian's last hospital contact with the patient usually involves instruction on the diet to be followed at home. However, it was recommended that the background and most, if not all, of the instruction be skillfully incorporated into the patient contacts prior to the actual moment of being discharged.

The problem of the short notice for home diet instructions still remains a primary complaint. A partial solution to this situation is a persistent effort to develop understanding and cooperation with the medical and nursing staffs. One dietitian in a 50-bed hospital has solved this problem by asking that each patient see her before he is discharged, regardless of the dietary prescription. Thus, she allots time for instruction of every patient.

The role of the dietitian in patient education has been excellently described in a report of a project conducted by the Diet Therapy Section of the District of Columbia Dietetic Association (6): "The dietitian has a complicated assignment, because she must impart nutrition education in an understandable, usable form and must also change behavior in food habits. Changing the patient's attitude to one of acceptance toward his food is an essential part of therapeutic treatment and is a task requiring all the skills, patience, and ingenuity which the dietitian can develop. Teaching should be so purposeful and productive that the dietary instructions will be considered on a par with other necessary details of surgical, medical, or nursing care."

One dietitian suggests that an important step in dietary education is giving recognition to the patient when he has made progress in his learning and encouraging him when his learning is slow. She adds, "Give the patient sound and sufficient understanding so that he will be well fortified against the contradictory advice of well meaning, but less informed friends or commercial temptations."

Many interesting suggestions were offered by dietitians who have evolved teaching techniques through trial-and-error experimentation. One writes daily progress notes on the patient's chart to inform and remind the physician of his patient's dietary needs as well as to report nutritional progress. Another allows a 2-hr. period once a week as a time to answer telephone calls from patients she has previously instructed. During this time she is also available to the doctors for conferences concerning hospitalized patients. This has resulted in an excellent dietitian-doctor-patient relationship. Another therapeutic dietitian uses the teaching mechanism of having each patient on a reducing diet keep weight charts and food intake records. In talking to the patient during mealtime visits, she can then correlate the foods served on the patient's tray, food values, dietary modification, and weight loss.

The most frequently used tool in teaching an individual patient is the printed diet form, individualized somewhat for each patient. Most dietitians supplement the form with menu plans to cover a varied number of days. A completely individualized instruction with a list of foods to avoid is used by a minority of those dietitians participating in this survey.

Class or group teaching of modified diets is strongly advocated by eighteen dietitians, who are

impressed by the results obtained by this method. They listed the following advantages: (a) The patient does not feel he is the only person being "picked on." (b) One patient will give a practical suggestion which will help the others. (c) A wider scope of material can be presented in a class. (d) Patients, as well as dietitians, maintain a higher interest level in class situations.

Instruction in normal nutrition is given by the majority of the reporting dietitians only at the request of the doctor or the patient. Approximately fifteen hospitals have organized classes in normal nutrition. In this realm lies a big field for dietitians to explore and expand.

A few dietitians use displays or exhibits in areas such as food clinics and near elevators and cafeterias. Effectiveness of this method of teaching was not evaluated. Movies, food models, and charts are commonly employed by clinic dietitians as tools of instruction. Articles in the hospital publication for patients were also listed as a means of presenting nutritional information.

Many obstacles appear to prevent a well organized program of patient instruction. One stumbling block is lack of a suitable teaching area. Another is sufficient time to do the job adequately. Immaturity and inexperience of staff dietitians in both formal and informal teaching situations is also felt by many to be a major limitation. Despite these hindrances, all dietitians must in some way progress toward a better teaching program.

OBSERVING SPECIAL EVENTS

A patient becomes most nostalgic for his home environment on a holiday or birthday. Because food plays a large role in holiday festivity, it is, therefore, a necessity as well as a pleasure for the dietitian to accentuate the menu and service for holiday meals. Not only are good public relations increased, but the dietitian-patient relationship is strengthened.

The specific accent for the holiday varies widely in accordance with the dietitian's time, budget allowance, patient census, and the available help from community groups. The following practices are most commonly observed by the reporting dietitians: (a) a menu including foods appropriate to the day, (b) festive tray covers and napkins, (c) tray favors, (d) candy and nuts, (e) printed menus or cards, and (f) holly, greens, or appropriate floral decoration on the tray.

Christmas, of course, receives the greatest emphasis. In one hospital, Santa Claus delivers the breakfast trays. In another, carols are played over the public address system at mealtimes. When ambulatory patients are served in dining rooms, the tables are seasonally decorated to make them gay and pleasant.

Several suggestions for observing special events are unique. In some maternity units, congratulatory tray covers for the first meal after delivery are used. Decorated cakes, frozen and stored for emergency use, serve as surprises to patients hospitalized on their birthdays. For patients on therapeutic diets, a cake may be made from circles of unsalted bread frosted with tinted cream cheese icing. Patients on reducing diets enjoy a candle placed in a gelatin molded dessert or in their salad.

Each dietitian must recognize the need for and the methods of establishing better dietitian-patient relationships. Only through this relationship of "devoted" service to the patient can she both justify and realize her professional existence.

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Selective Menus for Therapeutic Diets[1]

EVELYN PEARSON[2]

Hartford Hospital
Hartford, Connecticut

The need for the hospital diet adjusted appropriately in nutritive values has been summarized in the paper by Sebrell which precedes this. To meet the nutritional needs of the individual who is ill and consequently not his usual self is the task of the dietitian. However, even though the dietitian may know with certainty the precise requirements of the patients she is serving, she faces the critical problem of tempting the ill person to eat. The hospital diet can meet the nutritional needs of the patient only if *food served is eaten*—and patients in the unfamiliar hospital setting are sometimes required to change their food patterns drastically. Unfamiliar foods are served, salt is omitted, sugar is omitted, and dinner is served at noon. All of these factors play an important role in the tray that is returned untouched. Would the patient eat better if he had a choice of menu? Would

[1] Presented at the 37th Annual Meeting of The American Dietetic Association in Philadelphia, on October 27, 1954.

[2] Chairman, Project #3, Diet Therapy Section, The American Dietetic Association, 1953–54.

he make nutritional gains through such choice of foods? Would he better understand the need for modifications of his usual dietary pattern if he were allowed some freedom of choice while in the hospital?

These questions became the subject of Project #3, "The Use of the Selective Menu for Therapeutic Diets" of the Diet Therapy Section of The American Dietetic Association for 1953–54. The project was carried on as a workshop-by-mail. An attempt was made to gather the opinions of dietitians throughout the country on the use of the selective menu. Thirty of those responding are providing a choice of menu to patients requiring a modification of the normal diet. The degree of choice varies, depending on the institution, its size, and the clientele served.

Five areas were included in the study:

(a) The mechanics of instituting a selective menu.

(b) The costs involved.

(c) The variety of modifications that can be handled.

(d) The possible gains in nutrition by the patient.

(e) The reactions of patients to the selective menu.

ADMINISTRATIVE PROBLEMS

Most of the dietitians reporting believe that the administrative detail of menu selection can be handled easily. Menus can be planned so that few additional foods are necessary. Many commented that planning must include dietary modifications anyway, and giving some choice does not add appreciably to the work load. Some expressed it in this way: "If additional time is needed to write menus for choice, that time is saved over and over again in the elimination of the previously written individual therapeutic diets. This involves desk work for the dietitian that could better be put to use for instruction and patient visiting." Two dietitians noted that a selective menu for patients on therapeutic routines had eliminated the need for the outmoded diet kitchen.

The number of choices which patients are given varies, although the concensus appeared to be that a choice of two items is usually adequate. However, most dietitians felt that the number of choices per item might well vary from day to day, depending on the popularity of foods on the menu. Some additional substitutions beyond the menu are usually necessary and probably need to be standardized for efficient and controlled preparation of food and food costs.

A simply prepared meat item, along with a meat substitute, might suffice for entrées. Fruit plates with cottage cheese; salad bowls with cottage cheese, julienne chicken, and deviled eggs; and cold sliced turkey sandwiches all make acceptable noon-meal entrées which involve little additional expense or labor. Milk toast, poached eggs, and meat sandwiches often will satisfy the patient who does not like the entrée for the day.

A choice of vegetables need not always be available if a popular vegetable soup or a choice of salads is provided. Soup appears to be a favorite with all patients, and a cream soup can be nourishing for the patient who is not equal to eating a full meal.

Fruit as dessert is very popular and eliminates the need for many special desserts. Custards and ice cream are also acceptable to most patients and do not require time-consuming efforts in preparation.

COST FACTORS

It would appear wise to begin with a selective menu for patients on general diets and standardize a procedure with that group first. Additional employees may be needed when a selective menu for patients needing therapeutic routines is introduced, although few dietitians reported a need for more personnel in the preparation units. One dietitian added a baker's helper and a salad maker. Others rescheduled working hours to take care of the change in work load. Usually, if additional employees were required, it appeared to be in the area of collecting menus, tallying of orders, and the duplicating of menus.

The increased (daily) visiting of patients may also necessitate added personnel, perhaps as aides to the dietitian, but it is generally recognized that such visiting would, of itself, be beneficial to the institution. Such assistants could also be responsible for the food service to a group of patients.

The cost involved in duplicating menus is usually minimal. In many instances, the selective menu has replaced an extensive master menu plan or a series of weekly menus which were duplicated. There are hospitals in which several modified menus are used, for example: one menu is planned to fit the needs of patients on a bland, fiber-restricted, and soft diet, another for patients with diabetes or in need of a low caloric routine, and a third for the sodium-restricted patients. Other hospitals have combined menus, using one form for all therapeutic adaptations. Perhaps a pattern of placement of foods on the menu would help the patient to know what foods he might choose if a single menu were used.

TEACHING OPPORTUNITIES

The amount of dietitians' time which can be allocated to patient instruction seems to be the key to the success of this method of patient contact. All patients appear to need verbal instruction by a dietitian during the first days of hospitalization. Sample meal patterns worked out with patients have proved most helpful, and such contacts offer fine opportunities for teaching the importance of the protective foods. Because of the patient's interest in his menu, it can serve as a good motivating tool for instruction in nutrition and dietary modification. As he is taught how to choose foods and how to mark menus for special items, he can learn about the nutritive value of foods. To help him, he can be

given flyers or leaflets about nutrition which point up the importance of a balanced diet. (The dietitian should be alert to the many leaflets on nutrition which come across her desk, for many are available in quantity free.) Verbal teaching of therapeutic modifications can also be supplemented with printed material, such as the booklets on the exchange lists for diabetic diets. The mimeographed menu itself is also a medium for teaching good nutrition; simple comments on the nutritional values of the foods listed can help the patient in making his choices.

With such teaching and motivation for learning as the selective menu offers, the patient should soon be able to choose nutritionally adequate meals that will foster his early recovery and speed convalescence. Early ambulation has shortened the hospital stay, but convalescence, though lessened in time, is often carried on at home. Dietitians need to use the time in the hospital for all the teaching of nutrition and diet therapy that they can possibly give their patients.

There were several comments on the economy of professional time made possible with the introduction of the selective menu. It would appear that after the initial instruction or instructions are given by the dietitian, other personnel can visit the patients to help them make choices, collect menus, and tally orders. Assistants can help, and one dietitian reported that visiting was alternated between the dietitian, the non-professional supervisor, and the student nurse. However, there might be repercussions if too many people visited patients during the course of the usual eight-day hospital stay.

The daily teaching of patients while in the hospital can also alleviate to some extent the problem of last-minute instruction just prior to discharge of the patient. Many dietitians decrie the situation where they must teach nutrition to the patient who has his hat on and a bouquet of flowers in his hand and who is all ready to leave the hospital. Perhaps with teaching during hospitalization, this problem can be minimized. With help, many patients can learn to choose a menu that is pleasing to them and pleasing to the dietitian concerned about the nutritive value of the foods as well as the attractiveness of the plates.

There will always be patients who are unable to cope with menus, too sick to desire the privilege of choice, or too disinterested in food to care. In some cases, relatives could help decide on choices if the menus were available at visiting hours, and this is often an excellent way of developing rapport with the family of a seriously ill patient.

It is difficult to evaluate the possible improvement in food intake as a result of a selective menu. More study is needed in this area. None of the dietitians reporting had evaluated carefully the food eaten by individual patients before and after a choice of menu was instituted. However, most dietitians indicated that they have far less plate waste and, therefore, tend to believe that the patients do eat better. Two commented that milk is apt to be the item most often neglected. Perhaps this is the area where more instruction is needed. One hospital has partially solved the problem by encouraging a choice of both a hot beverage and milk and by supplementing the noon and night menus with a cream soup.

The immediate gain in the use of the selective menu is probably in the area of patient satisfaction. Menu selection can be an exciting part of the hospital day, and patients look forward to it.

The selective menu has many advantages. It does require the services of a dietitian who can be free to instruct patients daily. It requires a dietitian who enjoys teaching and patient contact. But it can be an asset through its effect on public relations, and it does not usually increase departmental costs.

Teaching Nutrition

"Extension Service Methods for Teaching Nutrition" are outlined in the July-August 1954 issue of *Nutrition Committee News*. Selecting the best method requires answers to three questions: What are we going to teach about nutrition? Why are we teaching it? Whom are we going to teach? When our objectives are well in mind, we can then select from three types of methods, i.e., individual, group, and mass contacts, the most suitable techniques.

Field studies have shown that people change their behavior in proportion to the number of contacts they have with different teaching methods. For example, as the number of contacts increased from one to nine, the percentage of farm families changing behavior increased from 35 to 98. If widespread response is desired, people must be "exposed" to the idea in a variety of ways and by many different methods, especially if the groups vary in education and culture.

Some of the practices we teach are simple while others are complex. When they are simple, or interest needs to be aroused, the news story, radio broadcast, or circular letter will be effective. Talks and lectures are important ways to present facts, while the changing of attitudes may involve discussion meetings. Many skills may best be taught through demonstration and television. Home visits or office calls are best when the client wants to ask questions, but group meetings should be used to bring problems before large numbers of people. Bulletins or other publications can be distributed at meetings, demonstrations, radio and television shows. Exhibits can be arranged in store windows, schools, fairs, and other places.

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Current Literature

Contributed by Mildred Bonnell and administrative dietetic interns, University of Washington, Seattle; Janette C. Carlsen and Ethel M. Miller, The Johns Hopkins Hospital, Baltimore; and the Journal staff

THE AMERICAN JOURNAL OF CLINICAL NUTRITION

Vol. 2, September-October, 1954

* The role of nutrition in the management of pregnancy. W. E. Josey.—p. 303.
* Diet and plasma cholesterol levels. G. A. Mayer, W. F. Connell, M. S. DeWolfe, and J. M. R. Beveridge—p. 316.
* The food consumption of juvenile diabetics. H. G. Jacobi.—p. 343.
* Dietotherapy: The low cholesterol, low fat diet. C. H. Robinson.—p. 353.

Nutrition in Pregnancy. The author reviews literature on this subject which appeared between 1950 and 1953. He discusses the relation between poor nutrition and the various abnormalities of pregnancy. He considers the dietetic requirements of the pregnant woman and the value of various vitamins and minerals.

Diet and Plasma Cholesterol Levels. Results of the study reported in this paper show that a diet low in fat and in cholesterol led to a highly significant decrease in plasma cholesterol levels, whereas the addition of cholesterol in the form of egg yolk caused no change. When the proportion of dietary fat was increased in the form of vegetable fat, a significant increase occurred in plasma cholesterol levels. These results indicate that, within the limits used in this study, dietary cholesterol has no effect on plasma cholesterol levels, whereas alterations in the level of dietary fat, whether of animal or vegetable origin, led to parallel changes in plasma cholesterol.

Food Consumption of Juvenile Diabetics. An analysis and estimation of diets consumed at home prior to a summer camp session was attempted for sixty-two girls and fifty-eight boys with diabetes. Most of the children were consuming carbohydrate (and calories) greatly in excess of their dietary prescription. Most of the children and their parents had not received adequate dietary instructions from either their physicians or from dietitians in hospitals and clinics. An analysis is presented of all children who were on "free diets" prior to coming to camp, to study the actual deviation from the so-called average food requirements as established by accepted standards.

The Low-Cholesterol, Low-Fat Diet. The low-cholesterol, low-fat diet is receiving careful scrutiny by the medical profession. There is by no means agreement as to the value of the diet or its quantitative definition, although increasing numbers of physicians are prescribing the diet, the essential features of which are reviewed in this article. Knowledge is lacking about all the modifying conditions which might increase or nullify its efficacy. The intelligent use of the diet demands that its characteristics be understood, and that each patient's response to the diet be evaluated frequently.

THE AMERICAN JOURNAL OF DIGESTIVE DISEASES

Vol. 21, September, 1954

* The nutritional factor in depressive states. M. Ant.—p. 261.
* Studies of appetite and of constipation in advanced life: psychological and statistical evaluation of a county home survey in Iowa. R Ginzberg and W. C. Brinegar.—p. 267.

Nutritional Factor in Depressive States. Ample clinical evidence has been gathered to indicate that deficiencies in specific nutrients may contribute to, or be responsible for, many psychic symptoms and may thereby become an important factor in psychosomatic disease, or even in organic pathologic findings resulting from traumatic incidents. Experience has shown that the needs of patients for a dietary regimen must be satisfied before medical treatment can be considered complete. The tendency of a patient to lose his appetite is often the primary reason for calling on medical assistance. It is essential that a full medical as well as psychiatric history be obtained, and a complete physical and psychiatric examination be made. In addition, exhaustive metabolic studies are needed and it is hoped that a metabolic investigation will be considered routine in every case of psychosomatic disease.

Appetite and Constipation in Aged. One hundred twenty-six elderly county home residents in the northwestern part of Iowa were interviewed. The data obtained were verified as far as possible by comparison with other data. The mean age of the group was 75.2 years, the oldest subject being 96 and the youngest 65. Appetite was found to be good or fair in 82 per cent of the subjects. Constipation occurred in 17.4 per cent of all subjects and in 24.3 per cent of the non-psychotic and mildly mentally ill. In the latter group, however, only 17.1 per cent had less than one bowel movement per day, and only 12.9 per cent had to take laxatives. It was found that correlations between constipation, insomnia, and length of stay in the home were of statistical significance. This study casts doubt on the widespread belief that poor appetite and constipation are major problems among the elderly.

THE AMERICAN JOURNAL OF MEDICINE

Vol. 17, September, 1954

* Blood lipid levels as influenced by weight reduction in women. N. S. Moore C. M. Young and L. A. Maynard.—p. 348.

Weight Reduction and Blood Lipids. This paper presents blood lipid data for twenty-four women who lost from 15 to 60 lb. at rates varying from 0.6 to 2 lb. per week on diets containing approximately 1400 calories and 50 to 80 gm. fat daily. Data are also presented for twelve women of comparable age who did not lose weight over a similar period of time. There was a rather wide fluctuation in blood lipids occurring in these women, whether losing weight under dietary control or changing little in weight with no dietary control. The data provide no support for the view that weight loss is accompanied by a drop in cholesterol or other blood lipids. On the contrary, a slight rise was indicated for most of the subjects. Statistical analysis revealed an increase of 0.58 mg. serum cholesterol and 0.64 mg. serum phospholipid per pound of weight loss for the group losing weight; both were significant at the 5 per cent level.

AMERICAN JOURNAL OF PHYSIOLOGY

Vol. 178, August, 1954

* Serum lipoprotein changes during fasting in man. L. Rubin and F. Aladjem.—p. 263.

Serum Lipoprotein Changes in Fasting. Fasting for four or five days resulted in a significant elevation of the low density serum lipoprotein concentration of five of six human volunteers. The concentration of high density serum lipoproteins was not significantly altered during the fasting. Restoration of normal levels occurred within 24 hr. after resumption of a normal diet. Sucrose ingestion at the end of the fasting period did not significantly change serum lipoprotein concentration in 3 hr.

THE BRITISH JOURNAL OF NUTRITION

Vol. 8, No. 3, 1954

* A qualitative study on family meals in Western Samoa with special reference to child nutrition. S. Holmes.—p. 223.
* The concentration of haemoglobin in the blood of young adult men and women: the effect of administering small doses of iron for prolonged periods. R. C. Garry, A. W. Sloan, J. B. de V. Weir, and M. Wishart.—p. 253.
* The role of fat in the diet of rats. 2. Influence of dietary fats on growth. E. Aaes-Jørgensen and H. Dam.—p. 285.
* The role of fat in the diet of rats. 4. Influence of supplementation with raw skim milk, linoleic acid or both on growth. E. Aaes-Jørgensen and H. Dam.—p. 296.
* The role of fat in the diet of rats. 5. Influence of supplementation with raw skim milk, linoleic acid or both on food and fluid consumption and

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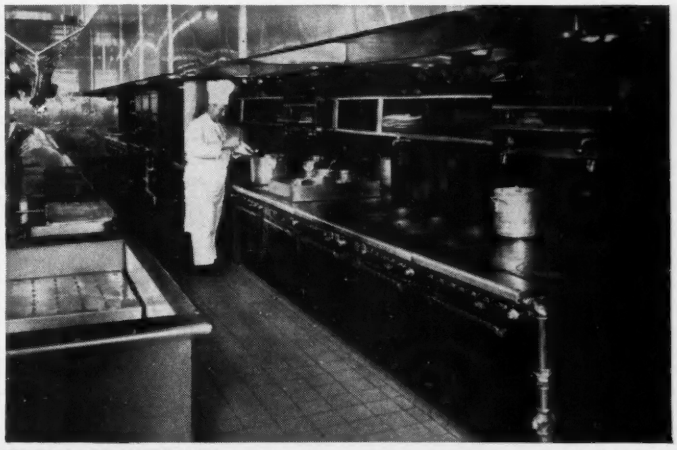

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urine production. E. Aaes-Jørgensen and H. Dam.—p. 302.

Xerophthalmia in the presence of kwashiorkor. H.A.P.C. Oomen.—p. 307.

Family Meals in Western Samoa. The social background of Western Samoa is described, together with the traditional methods of preparing and cooking food. The foods eaten were chiefly home-grown, although imported foods, particularly sugar, tinned meat, and rice, were eaten to some extent. Starchy foods were the most important home-grown sources of energy. There was no cow's milk; however, fish, shellfish, and eggs supplied some animal protein, along with small amounts of pork and chicken.

Hemoglobin in Blood of Young Adults. The concentration of hemoglobin in the blood of adult civilized women is known to be less than that of men. Experiments were conducted in which a supplement of iron was given. There was no satisfactory evidence that giving a small dose of iron increased the concentration of hemoglobin in the blood of women. It is difficult to attribute the difference between sexes to an inadequate intake of iron by women.

Dietary Fats and Growth. The article describes the effect on rats' growth rate of diets consisting of different levels of fats. Comparisons of the effect of these various diets are made.

Effects of Raw Skim Milk, Linoleic Acid, or Both on Growth. Female rats were reared on diets with lard, peanut oil, or hydrogenated peanut oil at two different levels. These diets were supplemented with linoleic acid, raw skim milk, or both. The growth rates are discussed.

Effects of Raw Skim Milk, Linoleic Acid, or Both on Food and Fluid Consumption and Urine Production. The ratio of total caloric intake minus calories for water evaporation to average weight gain per animal per day was very high with hydrogenated peanut oil diets. It decreased on supplementation with linoleic acid or with raw skim milk instead of water. An increased rate of evaporation was not a sufficient explanation of the increased caloric intake and poor growth rate.

THE CANADIAN MEDICAL ASSOCIATION JOURNAL

Vol. 71, September, 1954

* The effect of diet on the metabolic alterations of paraplegia. D. M. Wyse and C. J. Pattee.—p. 235.

Diet and Metabolic Alterations of Paraplegia. Two paraplegic patients were studied in regard to the effect of high and low calcium intakes on the excretion of these substances in the urine. A low calcium intake did not lower the hypercalcinuria already present. A high calcium intake raised the urinary calcium by 100 mg. per day on the average in one patient, but did not affect the urinary calcium loss in the other patient. Low calcium intake affected the calcium balance adversely, while high calcium intake appeared beneficial in producing positive balance or at least equilibrium. Lowered phosphorus intake was accompanied by a lowering in the urinary phosphorus level. It is concluded that a high-calcium, low-phosphorus diet might be a diet of choice in paraplegic patients who are immobilized. This study is being continued on a larger group of patients.

CEREAL CHEMISTRY

Vol. 31, September, 1954

* Studies on the incorporation of nonfat milk solids in whole wheat bread. I. Dough properties and baking tests. B. M. Kennedy, L. R. Fletcher, and A. R. Sabiston.—p. 347.

Use of Nonfat Milk Solids in Whole Wheat Bread. Whole wheat bread containing up to 22 per cent added nonfat milk solids of good baking quality was baked from seven commercial flours and from ten experimentally milled varieties of wheats. The commercial flours tolerated up to 22 per cent milk solids without loss of volume. Optimum volumes were obtained with from 6 to 22 per cent milk solids, depending on the flour. Volume increases as compared with water controls, ranged up to 14 per cent.

FOOD TECHNOLOGY

Vol. 8, October, 1954

* Effect of pulp quantity on chemical and physical properties of citrus juices and concentrates. A. H. Rouse, C. D. Atkins, and R. L. Huggart.—p. 431.

* Germination of spores in meats during cure. J. O. Mundt, C. J. Mayhew, and G. Stewart.—p. 435.

Effect of Pulp Quantity on Citrus Juices and Concentrates. The effect of pulp quantity, ranging from 2 to 26 per cent by volume, on water-insoluble solids, pectinesterase activity, pectic substances, clarification, and gelation in citrus juices and frozen concentrates is presented for Pineapple and Valencia oranges and Duncan grapefruit. The chemical and physical changes were measured prior to concentration after processing, and after storage of the concentrate at 80°F. for 24 hr.

Spores in Meats during Cure. It is shown that spores of *Clostridium sporogenes* c, obtained from soured meats, germinate exceedingly rapidly under conditions which preclude growth. The results indicate that spores of anaerobes may germinate in meats in cure, and would serve to explain the rapid production of abundant quantities of gas within a few hours after ineffectively cured meats are placed in the smokehouse.

JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY

Vol. 2, September 15, 1954

* Nutritive value of milk. Factors affecting the nutritive value of cow's milk. J. N. Bixby, A. J. Bosch, C. A. Elvehjem, and A. M. Swanson.—p. 978.

Measurement of food characteristics. Application of potentiometric rotary viscometer to measuring consistency of food purees and pastes. R. J. McCulloch and E. A. Beavens.—p. 986.

Vol. 2, September 29, 1954

* Pesticide residues in foods. Dichlorodiphenyltrichloroethane and dichlorodiphenyldichloroethylene content in prepared foods. K. C. Walker, M. B. Goette, and G. S. Batchelor.—p. 1034.

Biochemistry of myoglobin

Quantitative determination in beef and pork muscle. I. D. Ginger, D. G. Wilson, and B. S. Schweigert.—p. 1037.

Chemical studies with purified metmyoglobin. I. D. Ginger and B. S. Schweigert.—p. 1037.

Nutritive Value of Milk. Using albino rats as test animals, the authors found that the nutritive value of cow's milk was unaffected by season, pasteurization, or homogenization. They did learn, however, that rats maintained on a mineralized cow's milk diet accumulated excess fat in liver tissues.

Pesticide Residues in Foods. DDT and its metabolite DDE were found in detectable but very small quantities in twenty-five meals from restaurants and institutions. None of the meals contained enough DDT or DDE to be considered a toxicologic health hazard on the basis of the estimated chronic oral toxicity of the compound. It is suggested that foods intended for human consumption should be assayed in such a way as to determine the DDE content as well as that of DDT.

THE JOURNAL OF PEDIATRICS

Vol. 45, September, 1954

* Iron absorption in premature and full-term infants. L. Oettinger, Jr., W. B. Mills, and P. F. Hahn.—p. 302.

Iron Absorption in Premature and Full-Term Infants. Fourteen full-term infants weighing more than 2500 gm. and ten premature infants weighing less than 2500 gm. were studied. The mothers had no known chronic disease, and their pregnancies had been normal. A single test dose of ferrous chloride solution—6 ml. in volume and containing 200,000 counts per minute of F^{59}—was given each infant. The iron in the test dose represented approximately 1.0 mcg. elemental iron. The solution was maintained in the ferrous state by an excess of ascorbic acid, since it has been shown that ferrous iron is the form most readily absorbed from the gastro-intestinal tract. All test doses were given by gavage. Iron absorption was noted in all infants. Results indicated that at time of birth or within one or two days following, the physiologic mechanism for the absorption and utilization of iron from the gastro-intestinal tract is present and functioning. There was no relation between the mother's hemoglobin at delivery and the amount of iron absorbed by the infant. All infants showed absorption and utilization of infinitely small quantities of elemental iron. The value cannot be translated to cover larger amounts.

THE LANCET

No. 6836, September 4, 1954

* Potassium deficiency in the pathogenesis of nutritional edema in infants. J. D. L. Hansen and J. F. Brock.—p. 477.

No. 6837, September 11, 1954

* Experimental observations on the tetany of potassium deficiency. P. Fourman.—p. 525.

No. 6838, September 18, 1954

* Vascular disease in diabetes mellitus. J. D. Mathews.—p. 573.

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Potassium Deficiency in Infants. Sodium, potassium, chloride, and nitrogen balance studies have been carried out on six infants admitted to the hospital with nutritional edema associated with incorrect post-weaning feeding and diarrhea. All were treated with a skim milk formula. The data suggest that electrolyte imbalance is important in the pathogenesis of nutritional edema of this type. Correction of potassium depletion can modify the edema without correction of nitrogen depletion or alteration of serum protein levels. There was evidence of reciprocal relation between potassium and sodium in this edema.

Potassium Deficiency and Tetany. Tetany, which is occasionally seen in clinical deficiencies of potassium, was twice reproduced in experimental deficiencies. It was associated with increased irritability of the nerve trunk. Intracellular ionic disturbances might contribute to the tetany. Sodium, returned in place of potassium lost from the cells, was not immediately released when potassium was restored, and it was then that tetany was oberved.

Vascular Disease in Diabetes. Five hundred forty-five diabetic patients of all ages and 574 non-diabetic patients over the age of fifty were examined for vascular disease. Vascular degeneration was found in 53 per cent of diabetic patients, of whom 21 per cent had retinopathy and 12 per cent albuminuria. The incidence of vascular disease increased with age, and over the age of fifty years was higher in the diabetic than non-diabetic. The incidence of retinopathy and albuminuria did not show a progressive increase with age. Vascular disease was much higher with "poor" than with "fair" controlled diabetes.

NEW YORK JOURNAL OF MEDICINE

Vol. 54, September 1, 1954

* The safety of water fluoridation. E. R. Schlesinger.—p. 2449.

Safety of Water Fluoridation. Fluoridation of water supplies to optimal levels of 1.0 to 1.5 p.p.m. of fluoride has been conclusively shown to be effective in reducing the incidence of dental caries, to be safe, and to produce no demonstrable systemic effects. The medical profession endorses this as a public health measure.

NUTRITION

Vol. 8, Autumn, 1954

* Teaching nutrition to caterers. P. Fisher.—p. 113.
* Sodium and the heart. P. R. Fleming.—p. 127.

Teaching Nutrition to Caterers. The need for teaching nutrition to caterers, cooks, and catering students has been apparent for some time. Community feeding can be dangerous when it is administered by caterers and cooks who do not know the nutritional needs of people and do not know how to choose and prepare foods. What to teach, when to teach, and methods of teaching are discussed.

Sodium and the Heart. To a patient in cardiac failure, sodium is little more than a poison. This article considers briefly the role it plays in the development of heart failure and of the methods used to counteract its deleterious effects. A "salt-free" diet, mercurial diuretics, ion-exchange resins, and digitalis are discussed.

PROCEEDINGS OF THE NUTRITION SOCIETY

Vol. 13, No. 2, 1954

* The gluten-free management of coeliac disease. D. Lawson.—p. 75.

Statistical aspects of dietary surveys. B. Woolf.—p. 82.

Infant-feeding practices. Breast feeding and the prevention of infant malnutrition. B. S. Platt.—p. 94.

* The influence of the protein and energy content of the diet on the liver. H. N. Munro.—p. 115.
* Dietetic aspects of the treatment of liver disease. A. L. Latner.—p. 139.

Gluten-Free Management of Celiac Disease. In treatment of celiac disease, the starch-free diet, of normal fat content, achieved success under the strict dietetic control which is possible in a special unit in a fully equipped hospital. However, this success was not fully maintained after discharge of the children to their homes. The relative simplicity of the gluten-free diet gives hope that by this means the success achieved in the hospital may be sustained under home conditions.

Influence of Dietary Protein on the Liver. The protein content of the liver changes much more rapidly and extensively than that of most other tissues. No cogent reason has been advanced for regarding the protein so gained or lost as representing a store, or as being set apart in its intracellular location. The factors responsible for differences in protein metabolism of different tissues remain obscure.

Dietetic Aspects of Liver Disease. In the acute stage of severe liver disease, a large protein intake may well be an unnecessary strain on the capacity of a damaged organ. Various attempts must be made to stimulate the patient's desire for food, since anorexia is common with liver disease. Meals should be presented in an attractive fashion. On occasion, crude-liver extracts injected intramuscularly increase the appetite.

THE ROYAL SANITARY INSTITUTE JOURNAL

Vol. 74, September, 1954

* Symposium on human and animal sources of gastro-intestinal infection
  (a) The spread of some bowel infections from human sources. M. T. Parker.—p. 847.
  (b) Animal sources of food infection. S. Cayton.—p. 856.
* Bacteriological investigation of polluted watercress beds and disinfection of watercress. A. H. Walters, C. M. Cousins, C. A. Bailey, and F. H. A. Burton.—p. 874.

Human Sources of Gastro-Intestinal Infection. A large proportion of the bowel diseases common in England are contracted from human sources by the ingestion of fecal matter. Explosive food-borne outbreaks account for only a minority of reported cases. There is evidence of a good deal of spread associated with personal contact. It appears that small numbers of fecal bacteria are frequently transmitted from person to person in the home.

Animal Sources of Gastro-Intestinal Infection. It has been suggested that food poisoning from meat products could be reduced if more attention were given to the production of clean meat in the abattoir. A method of "pasteurizing" liquid egg is described. It is suggested that dogs and cats constitute a hazard which should be reduced by total exclusion from food premises. Rats and mice are also important.

Polluted Watercress Beds. Pollution of two watercress beds is reported. This could have arisen from (a) direct surface drainage from nearby pigstyes, (b) by river water which received discharges of sewage, (c) by water pumped from constructional tunnelling for an adjacent sewer. A method of disinfecting watercress by the use of hypochlorite is described. Some aspects of enteric and poliomyelitis infections in relation to uncooked salad vegetables are discussed.

SCIENCE

Vol. 120, September 24, 1954

* Purity and adequacy of foods. R. R. Williams.—p. 473.

Vol. 120, October 8, 1954

* Nutritional studies with the white-throated wood rat. R. Van Reen and P. B. Pearson.—p. 571.

Purity and Adequacy of Foods. The author discusses developments in the history of the federal Food and Drug Administration. He also describes the way in which the Food and Nutrition Board of the National Research Council cooperates with the Food and Drug Administration to find solutions to problems.

Studies with the White-Throated Wood Rat. The white-throated wood rat was studied as a mammalian species which might have nutritional patterns unique for research. Although the wood rat appears to have several characteristics worthy of further investigation, the difficulties encountered in maintaining the animals under laboratory conditions make it unlikely that they will find widespread use. Not only was there a poor growth response to a purified type of diet, but reproduction under laboratory conditions was unsuccessful.

THE SCIENTIFIC MONTHLY

Vol. 79, October, 1954

* Should fluorides be added to public water supplies? J. H. Shaw.—p. 232.

Fluorides and Water Supplies. It is the opinion of this author that adding of fluorine to the public water is both effective and safe. The only foreseeable tangible danger involves the possibility that its dramatic benefits may lessen the willingness of the public to support dental research or decrease the zeal of independent investigators to continue their research on dental caries.

SOUTH AFRICAN JOURNAL OF CLINICAL SCIENCE

Vol. 5, June, 1954

* The association of undernutrition and psychosis. J. S. du T. de Wet.—p. 97.

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Undernutrition and Psychosis. An association between signs of undernutrition and features of organic-reaction type of psychosis was found to exist in female natives of the Eastern Cape Province in South Africa. The incidence of psychosis associated with undernutrition was much greater among urban than rural native women admitted to the hospital.

ADULT LEADERSHIP

Vol. 3, October, 1954

* Group addiction . . . its cause and cure. K. W. Back.—p. 8.
* Workshop on audio-visuals. P. Wagner.—p. 12.
* Choosing the right A-V. deL. Reid.—p. 20.

Group Addiction. In studies of human group behavior, it was found that (a) people in groups behave in certain ways and express certain beliefs in order to remain a member of the group; (b) people lose the ability to evaluate fellow-members on their merits, but do so rather by how well the members relate to the group and what their position on relevant issues is; and (c) people in groups are more easily swayed by emotional outbursts, like panic and aggression, than they would be individually. A person acts in a group according to the degree to which he wants to stay in that group. A group can be easily manipulated, but a group cannot be made to accept ideas and perform actions, although members can be led to believe that their wishes are being carried out. This article discusses the advantages and disadvantages of these important factors of group behavior. It brings out the evils of group action and manipulation and the dangers of the misleading of groups. It asks the question: Should education be directed toward further integration in groups or toward independent thinking? Also, when and how should group techniques be used? Group manipulation and force can be compared to taking drugs; the addict will either become immune to the drug, or he will become dependent on it in larger and larger doses. If the proper dosage is used when needed, it will help instead of hinder. Thus, as more study of group action is carried on, we see that the use of groups in industry, and also in propaganda methods, can be a danger to the individuality of man.

Audio-Visual Aids. This article introduces the "audio-visual workshop" incorporated as a feature of the month in the magazine. The author, Paul Wagner, brings out the advantages and disadvantages of audio-visual aids and shows how the advantages, by simple logic and by experience, outweigh the disadvantages. As an example to prove his point, Mr. Wagner uses high school education in Shakespeare. In one community, 87 per cent of the students voted Shakespeare the subject they *hated* most, yet today adults take a great interest and thrill in listening to recordings of Julius Caesar by Orson Welles or seeing Brando and Mason in the film, *Julius Caesar*. What is the difference between the high school play and the film play? The way it is presented. Audio-visual media have proved their power time and again in P.T.A. meetings, church groups, armed forces instruction, and public forums. In surveys taken of group meetings where audio-visual aids were used, of the groups interviewed, one reported that 84 per cent of those attending would not have come if a film hadn't been shown; in others, attendance increased ten times when a film, instead of a speaker, was offered. The disadvantage, or the greatest disadvantage of audio-visual media, is that the speaker can communicate with the audience, but his audience cannot communicate back to him. This article deals with the "philosophy" of audio-visual aids, how and why they are successful, and it contains a checklist for use by organizations or groups contemplating the technique in instruction or entertainment.

Choosing A-V Aids. This chart will help groups select the right audio-visual media for use at meetings. The chart explains the types of audio-visual materials which are particularly useful with certain groups and whether the particular materials may be used to: (a) give information, (b) develop a skill or a technique, (c) change or reinforce attitudes, (d) instruct, or (e) combine two or more of these uses. Cautions and comments are included for special instruction.

AMERICAN RESTAURANT MAGAZINE

Vol. 38, September, 1954

* Customers like to make salads.—p. 58.

Self-Service Bar for Salads. A salad bar for self-made salads and a fruit bar for self-selection are found in a famous Tennessee restaurant. In the morning, the equipment is used for a fruit bar since its mirrored back and bed of ice are well suited for displaying breakfast fruit. Then at noon and in the evening, salads are displayed in the same place for self-service by patrons. In addition to saving labor and time and giving the guests an interesting experience, this bar also serves as a profitable advertising scheme.

FOOD ENGINEERING

Vol. 26, September, 1954

* Puts brake on browning of ketchup in bottle necks. W. L. Ogle and A. Kramer.—p. 67.

Vol. 26, October, 1954

* Brewer's dried yeast finds new uses in foods. E. Singruen and J. V. Ziemba.—p. 50.
* Research solves problems in canning sweet potatoes. J. G. Woodrood, W. E. DuPree, and S. R. Cecil.—p. 65.
* New process produces instant non-fat dry milk. C. R. Havighorst.—p. 75.
* Cheese keeps longer in antimycotic wrapper. H. H. Mottern.—p. 93.

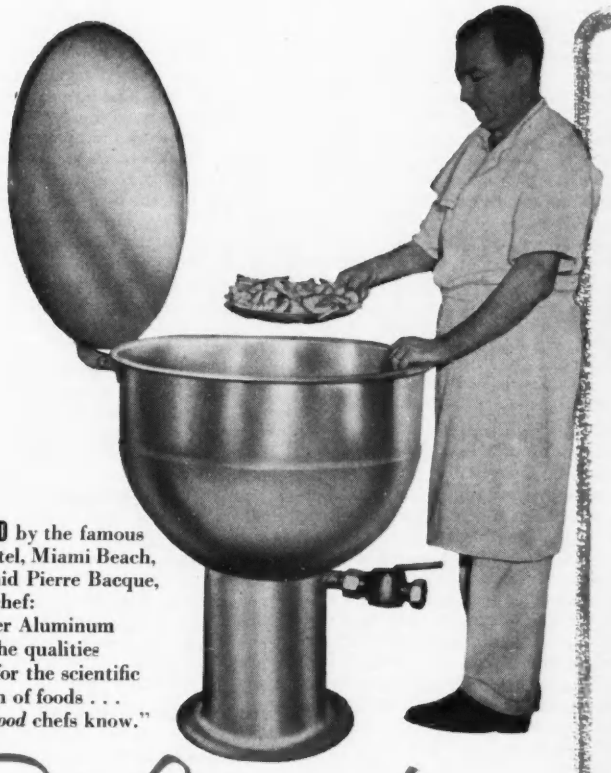
Ketchup Coloring. Processors of ketchup are bothered with the problem of the red discoloration, especially the darkening to a brown color which occurs in the neck of the bottle when it is stored for any length of time. Recent research at the Maryland Agricultural Experiment Station has shown that the rate of color deterioration in the neck can be retarded by corn sirup. Manufacturers sent samples of ketchup to the Station, where they were kept in storage, with no attempt made to keep the temperature constant. The results of the experiment showed that the color of ketchup in the necks of the bottles deteriorated rapidly during the first few months of storage, although color in the bulk of the product was maintained and discoloration did not appear until after six months' storage. Both the red and yellow pigments decreased during storage and were not affected by the addition of corn sirup. The article includes charts and tables of the experimental results.

New Uses for Brewer's Yeast. Discovery of the high nutritional value of brewer's yeast created a ready market for it as a nutritional supplement for animal feeds, but its introduction into human foods has been slow. Research has shown that the yeast has physical qualities which are beneficial in the production of many foods. Some of the uses of dried yeast in human foods are: (a) prevention of separation of water from solids after boiling of dry mix soups, because of its emulsifying effect; (b) increase in moisture retention when incorporated in bread, cakes, doughnuts, and certain meat products; (c) emphasis on flavor in cakes and other bakery goods; and (d) improvement in the flavor of processed cheese. This article describes the processing of brewer's dried yeast and tells how it is prepared as an ingredient in foods.

Sweet Potatoes. The canning of sweet potatoes, a popular commodity which is not only highly nutritious, but also may be served in many different ways, is explained. The article lists the best varieties of sweet potatoes, describes improved storage and handling methods, and cites new processing techniques. Included in the article are an illustrated plant setup, charts showing how size and storage affect peeling time and trimming loss of potatoes, and a table on sensory evaluation, losses and yields, and alkali demands of different varieties of potatoes. How canned sweet potatoes are affected by the sugar used in the processing is explained and problems of taste, color, and storage are discussed.

Instant Non-Fat Dry Milk. After thirty years of research, a non-fat dry milk has been developed which has these properties: (a) it dissolves very quickly, and completely, in water—even in ice water; (b) it is free-flowing—doesn't cake in packages; and (c) it does not foam when reconstituted. Competition between companies in developing such a product has been a stimulus to the successful achievement of the product. Although the process is secret, some of the steps used in its manufacture are described, and the history of non-fat dried milk, its processing and development are told.

New Wrapper for Cheese. Experiments with cheese wrappers have brought about developments in the use



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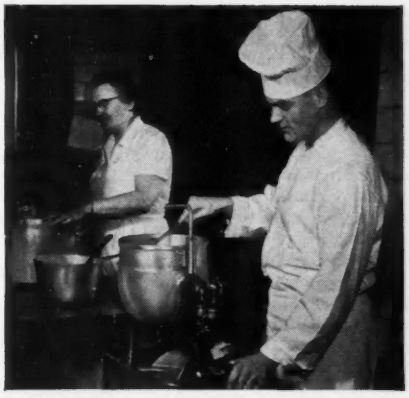

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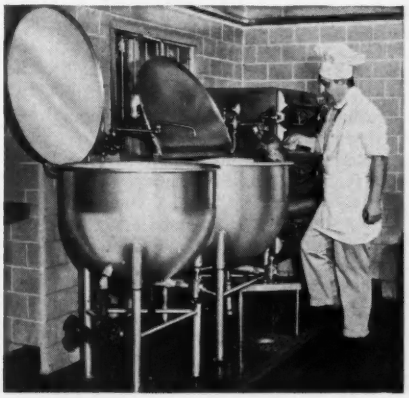

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of a wrapper additive—dimethyl dichlorosuccinate—in preventing cheese mold growth, and protecting flavor, color, and appearance during storage. In storage experiments, it was found that mold growth of cheese in the treated wrappers was only 1 per cent after twelve weeks as compared to 32 per cent for the same product wrapped in the same way, except that it did not have the antimycotic agent added. Also, the flavor, color, and appearance of the cheese were excellent. Experiments were made of the transfer of the agent to the product, and tables in the article show the degree of the transfer to the cheese. The advantages of the new wrapper are: (a) shelf-life of consumer packaged cheese is substantially increased; (b) loss of product due to invasion by mold is reduced during the ripening and display periods; and (c) flavor, color, and appearance are maintained during storage, distribution, and display.

FORECAST FOR HOME ECONOMISTS

Vol. 70, October, 1954

Fresh vegetables . . . a modern miracle. A. S. Day.—p. 42.

* Basic foods work together. L. H. Booher.—p. 44.

Demonstration Methods to Show Basic 7 Values. At the Laboratory of Vitamin Technology, the author and staff conducted a series of three, three-year experiments dealing with the Basic 7 Foods Guide. Purpose of the investigation was to develop a series of animal demonstrations which can be used in schools to point up the interrelationships of the foods listed in the seven basic groups and to show how nutrients in one group supplement those in another. The first experiments were designed to show the relation of a given combination of basic foods to over-all growth and development, as compared with that of either food alone. The second series showed the effect of replacing one of the basic foods with a non-basic food which had only accidental, or no nutritional value. The third series proved that the degree of supplementation between the two nutrients in two basic foods depends on the proportions in which the foods were combined and eaten. The three series were labeled: Experiment 1, breakfast cereals and milk are supplementary; Experiment 2, sugar and starch are inadequate supplements for milk; and Experiment 3, not all breakfast cereal and milk combinations are equally supplementary. Instructions for carrying out and planning these and similar experiments are included, as well as a list of materials needed.

FOUNTAIN, LUNCHEONETTE AND DINER MAGAZINE

Vol. 1, October, 1954

* Tips on uniform care. E. F. Ruder.—p. 16.

Uniform Care. This article will be of special interest to those who wish to cut employee uniform cost. It contains information on basic fabric care and sections on (a) reasons for under-arm wear, (b) what causes pocket wear, (c) the why's of cuff wear, (d) preventing premature neckline wear, (e) how to protect the waist front, and (f) what causes skirts to wear out. There are helpful and money-saving tips that will increase the wear of uniforms made of both cotton and synthetic fabrics and decrease the cost of uniform upkeep.

HOSPITAL MANAGEMENT

Vol. 78, September, 1954

Improving human relations. D. C. Carner.—p. 48.

Dumbwaiters to simplify housekeeping.—p. 52.

* Suggested equipment for small hospital dietary departments. Part II.—p. 94.

Apples . . . for desserts, salads, pies. D. R. York.—p. 105.

Kitchen Equipment. This article, the conclusion of a two-part series, presents a useful check list for those who are remodeling or building a new kitchen. Some of the features of the article along the construction line are details about the type of material best suited for walls and floors in various areas. Ceilings and sound-deadening materials are also mentioned. Of special interest is the approximate wattage per square foot for the different areas. Where equipment is considered, only what should be included and the capacity are outlined, leaving the selection and comparison of manufacturers' products to the individual. Nothing has been overlooked; even cut-out switches and gas and steam connections are included.

HOSPITAL TOPICS

Vol. 32, September, 1954

* Food poison outbreak. N. L. Thompson.—p. 18.

Food Poisoning Emergency. This is the story of how a hospital met a community food poisoning outbreak. The hospital is Merced County General Hospital in Merced, California. The food poisoning, which affected almost three hundred Mexican-national agricultural workers from a labor camp, was discovered to be due to the meat loaf served in sandwiches at the camp. The infection was caused by one man—the man who made the sandwiches—and the meat loaf was contaminated by toxins on his hand. The hospital, which has a 300-bed capacity, was already 89 per cent filled when the first twenty cases were reported. The patients, many of whom had to be kept outside on the hospital grounds, were treated with intravenous solutions of glucose and saline, and intramuscular injections of streptomycin and penicillin. The article describes how the patients were treated and how extra personnel and supplies were quickly obtained in the emergency.

HOSPITALS

Vol. 28, October, 1954

* Patients write their own meal tickets. E. E. Halleck.—p. 135.

Selective Menus. At Greenwich Hospital in Connecticut, patients throughout the whole hospital use selective menus. This system is very popular and is also a great aid in furthering the hospital's public relations. Every patient has the opportunity for menu selection each day, regardless of the cost of his room. The Greenwich Hospital has its menu selection service and preparation down to a simple system, behind which is expert planning, cooperation, and a great deal of thought. When a patient enters the hospital, the therapeutic dietitian visits him and gives him a folder on good eating habits, which also includes instructions on choosing meals from the selective menu. In the mornings, volunteers, who are part of the hospital's auxiliary, distribute the menus for breakfast, luncheon, and dinner for the next day. The dietitians attribute the success of their program to six factors: (a) detailed menu planning; (b) team planning and organization; (c) constant supervision of food preparation and service; (d) attractive tray service; (e) observing the "little things that count"; and (e) nutrition advisory service. In evaluating the selective menu service, the hospital found that it not only pleased the patients, but that it was also economical. The kitchen knew exactly how many items of each food were needed every day, and, in the long run, there was less food waste.

HOTEL MANAGEMENT

Vol. 66, September, 1954

A coffee shop redesigned. V. Sleeth.—p. 60.

* Pre-fabricated meat and fish cuts. M. Batey.—p. 64.

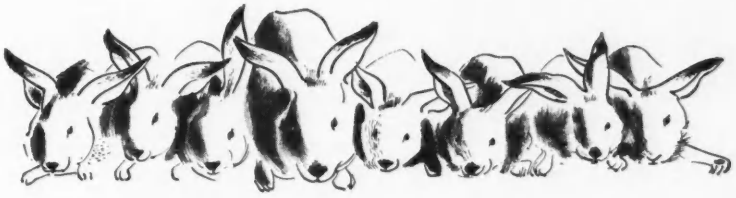
Prefabricated Meat. The modern trend toward buying prefabricated meats is a money-saver in at least six ways: every portion is exactly the same; each piece weighs the specified ounces desired; there is less unused meat left in the refrigerator to lose weight and flavor; food cost is kept within reason; and less than 30 per cent of the refrigerator space is required for primal cuts, also reducing operating expenses in storage and cutting and handling costs as well. Many types of prefabricated meats are now available, such as sandwich steaks, ground beef patties, tenderloin steaks, wafered veal cutlets, shoulder lamb chops, beef short ribs, ham steaks, and pork back-ribs.

INSTITUTIONAL FEEDING AND HOUSING

Vol. 3, October, 1954

* Pre-mixes cut baking costs. R. C. Hockett.—p. 20FH.

Premixes Cut Baking Costs. Freshly baked goods, always a favorite with customers, involve extra space, skilled labor, purchase and storage of many varied ingredients, and much extra time and detailed scheduling. One of the biggest drawbacks in preparing baked goods is that there can be a complete loss of profit should there be a great many unsold items or baking failures. In using premixes, the baking failures are eliminated. The premixes pin down costs; before they are made, the yield and exact cost per helping can be deter-



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1. Herrington, B. L.: Milk and Milk Processing, New York, McGraw-Hill, 1948, c. 2.
2. Gunther, M.: Brit. J. Nutrition 4 (No. 2): 215, 1952.

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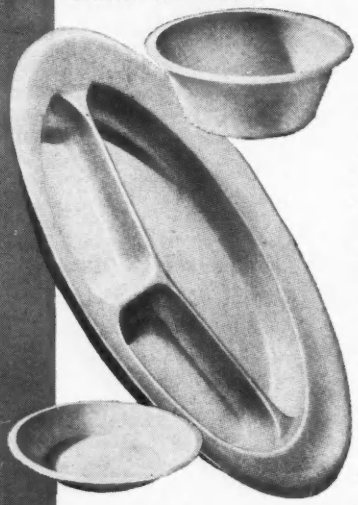

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mined. Another advantage is that the same mix can be varied by simple decoration or additional flavoring or ingredient.

INSTITUTIONS MAGAZINE

Vol. 35, October, 1954

* Trademarked by good grooming.—p. 9.

* Effective organization charting takes practice. R. Bares, Jr.—p. 26

* Why portion control?—p. 33.

* Portion control to fit patron needs. A. Sanders.—p. 42.

* Specialized food service duties. S. M. Hartt.—p. 100.

* Freezing tips for precooked entrees. A. M. Macfarlane.—p 104.

Develop time-saving method of serving bulk ice cream.—p. 109.

* Selection of food waste disposers. J. R. Myers.—p. 127.

Check food infections with strict T&T control. I. Silverman and G. Sussfeld.—p. 139.

Good Grooming. This article is one of a series on the importance to an institution of good grooming of employees. It concerns a restaurant chain which uses a highly effective system of employee grooming. The restaurant assigns a supervisor, called a directress of service, to each of its operations in New York, Chicago, Philadelphia, Cleveland, Detroit, Pittsburgh, and Minneapolis. The supervisors are responsible for the appearance of the waitresses and the manner in which they serve the patrons. Each waitress receives a handbook which outlines the grooming requirements expected of her. It covers everything from hairdoes and uniforms, makeup and nail polish, to manners and methods of serving food. New waitresses must attend a training course while they are on the job for several weeks, and later refresher meetings, as well. All of the workers are given clean uniforms whenever they are needed, if necessary, twice a day. The executives of the chain are proud of their program, for it pays off—both as far as the restaurant and the waitresses are concerned. These restaurants have a reputation for neatness and cleanliness, and their waitresses have a reputation for friendliness and neat appearance.

Organization Charts. Managers of institutions often have charts of volume, costs, staffing, turnover, and profit on their walls, but for some reason seldom have an organization chart. The charts mentioned are, of course, basic to good organization and responsibilities of an organization, but an organization chart tells where the responsibilities of an institution lie; in other words, it puts responsibility in writing. This article is illustrated with two charts. One is a complicated and unbalanced organization chart—an example of the wrong way to make one. The other is a simple and balanced chart—made the right way. The article points out that, although employees know the chain of command and opportunity of advancement in their institution, a well-drawn organization chart pays handsome dividends in better management and friction-free operations. It is also a useful reference and provides a framework for understanding and teamwork, good personnel relations, sound planning, and effective modern management. Working out an organization chart is clearly explained.

Food Budget. The key to institutions which are spending too much is the same advice given to a person who is eating too much—watch your weight! Giving too much weight in portions of meat, dairy products, fruit, and vegetables can be disastrous to profits and budgets; to solve this problem, one must use portion control. With portion control, the proprietor can know how many slices he will get to a pound of meat, how many slices of tomato per tomato, how many slices of cheese to a pound, and so on. Portion control not only gives the operator more for his money, but also gives the customer food with more eye appeal. Actually, portion control also helps in an institution's public relations, for the serving of unequal portions will never be popular with patrons. Although portion control is a fairly new development to the food institution, it has been a regular practice in industry for some time. A manufacturer of tea bags can tell you how many bags there are to a pound; the baker of crackers can probably tell you how many there are in a box. In fact, the whole industry of prepackaged foods is a monument to the value of portion control. In institutional portion control, the guess work is taken out of food preparation. To accomplish this, make up a series of charts which cover cooking and food preparation and post them where kitchen employees will have them readily available. Another way is to have receiving scales so that you may check purchases.

Hospital Dietitians. This is the conclusion of a six-part series on food management in hospitals, taken from a proposed book. This article illustrates in detail the duties of the hospital dietitian. Her administrative tasks are varied and include: (a) setting policies; (b) menu planning and food production; (c) ascertaining patients' satisfaction with their food; (d) purchasing and controlling food and supplies; and (e) other responsibilities, such as establishing standards for housekeeping in her department and supervising their maintenance, scheduling workers, and planning and enforcing standards of sanitation. There is considerable public relations opportunity involved in hospital food work, and the dietitian should be careful in her manner toward the patients, their visitors, her employees, and other members of the hospital staff. Probably the most important factor in the dietitian's training is management and leadership. Since she obviously cannot do all the duties performed by a hospital's food staff, she must be able to manage the department in a way that will divide responsibilities and demonstrate her ability to work with others toward a common goal.

Freezing Tips. One of the greatest problems of freezing precooked foods is that the fat in some poultry becomes rancid, whereas with other poultry, precooked dishes can be successfully frozen. This article deals not only with the precooked frozen poultry problems, but with many other problems that arise when freezing meats, fish, and combination

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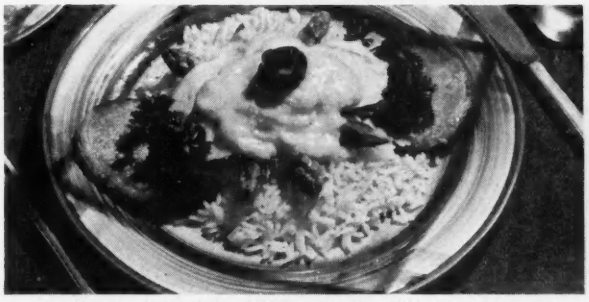

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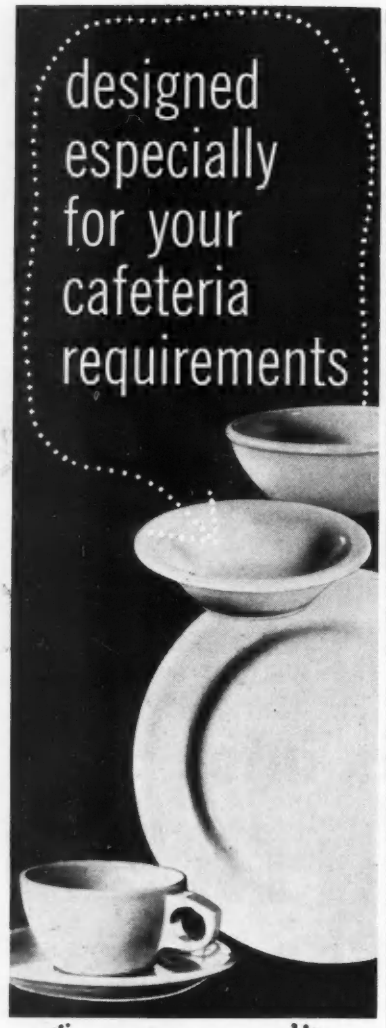

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dishes. The author gives helpful tips and advice that will be of value to those who would like to prepare take-out food as well as to institutional dietitians and food service managers who would like to prepare precooked foods for future use. Foods that should be avoided when freezing are listed, and instructions on packaging to best advantage are included.

Waste Disposers. Food waste disposers are a comparatively recent development. Contributing factors to this development have been a shortage of manpower, which means a shortage of waste and garbage collection in many cities, and a demand for higher standards of sanitation. Efficiency experts have found that commercial kitchens can eliminate waste that occurs in food preparation more efficiently when and where it occurs than if waste elimination is taken care of at one time. This article deals with the selection of a disposer. It is first pointed out that disposers, although expensive, are in the long run more economical than regular pick-up or scavenger services. If an institution has a daily volume of $500, a disposer will pay for itself within about three months, the actual time depending on the nature of the particular installation and also on losses and expenses of previous waste disposal. For instance, in many institutions, the loss of silverware due to carelessness in waste disposal is often very high. Many of the new modern waste disposers are designed with a flat surface so silver cannot enter the mechanical apparatus of the disposer, and some are designed to stop when anything metal is put into them. The article discusses problems that arise in using waste disposers as well as the advantages of their installation. In purchasing a disposer, these questions should be considered: (a) What type of food waste do I have? (b) How much of my food waste is vegetable? How much is bone? (c) How many sources of waste are there in the operation? (d) If we went to a central system—a large-capacity mechanical disposer centrally located which would handle the entire volume of trash and garbage—what would be the traffic problem in getting waste to the disposer? (e) Can I best locate one or several disposers in my kitchen? The article is illustrated with manufacturers' models.

THE MODERN HOSPITAL

Vol. 83, October, 1954

* What's brewing in the kitchen.—p. 74.

* Practical aids for the therapeutic dietitian. S. R. Mitchell and E. G. Lathan.—p. 108.

Hospital Food Service. This is a round table discussion on modern hospital food service. Participants are hospital administrators. The discussion includes views on and examples of new trends in food service operations. Included in the topics are: (a) the use of food service managers; (b) training programs for stewards; (c) new equipment; (d) cost accounting methods; (e) employee cafeterias; and (f) efficient kitchen layout. Quite a bit of the discussion is devoted to the hospital dietitian. Some of the hospitals represented did not have professional dietitians, but employed food managers to do the administrative work of the dietitian, while a member of the medical staff handled therapeutic diets. The methods of cooperation in food purchasing between the dietitian and the purchasing agent, and the over-all cost of meals, including labor and equipment are considered. One of the issues that was discussed extensively was the problem of feeding employees. None of the hospitals involved offered a selective menu for their employees, although it was used for patients. Also, the employees—the nurses—did not have the privilege of ordering "snacks," between meals, as do patients. Of special interest, also, is the discussion of the future use of mobile cafeterias in hospitals.

Aids for Therapeutic Dietitians. A practical aid to the therapeutic dietitians in preparing daily meals is the colored tray card system used at Herrick Memorial Hospital, Berkeley, California. This type of system, which is carried out with the help of the nurses and the dietary secretary, is accurate. The dietary instructions are taken from the doctor's order on the patient's chart. The colors also offer a quick and efficient way of counting and keeping track of the different types of diets served. The card is a good way to note patients' food preferences. The disadvantages are that the cards are removed from the tray before it is returned to the kitchen, and the dietitian cannot identify an individual patient's tray unless otherwise marked. In the long-run, however, the hospital found that the system is a time-saver and is very accurate. The hospital believes that each patient should receive a visit from the dietitian, and to make best use of the dietitian's visiting time, patients receive a booklet, with cartoon illustrations, which explain their particular diets and tell how that diet will benefit them. Thus some of the time a dietitian might have to spend explaining the need for dietary modifications is saved. The pamphlet includes a space for "likes" and "dislikes" which the patient fills out for the dietitian's records.

PERSONNEL JOURNAL

Vol. 33, September, 1954

* How not to scare the participating trainee. L. Young.—p. 134.

Vol 33, October, 1954

* The "incident" method: its use with buzz groups and filmstrips. B. J. Speroff and A. K. Hyegrick.—p. 172.

Trainee Participation. Actual participation in training by the trainee produces the most effective results, but it also brings up the problem of getting the trainee to participate without forcing him to do so and without making a ceremony of the whole affair. In other words, the instructor has to "sneak up" on a trainee in a way that will not make him panic out of group participation. This article tells how this can be accomplished in role playing, in starting a buzz session, and in opening conferences. For example, in role playing, instead of picking two trainees out of a group and instructing them to conduct an inter-

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The "Long Frying Life" Fat

view, better results are obtained by involving the whole class in a discussion of the situation, presenting questions pertinent to the situation until most of the class contributes answers, and then selecting two people to try one of the suggested procedures. Informality should dominate the initial try, and the interview between the two trainees should be carefully prodded by the instructor. The same method can be used in starting a buzz session and opening a conference. Good and bad ways to open a conference should be discussed thoroughly by the trainees, and suggestions by all should be encouraged.

The "Incident" Method. The incident method is a modification of the popular case method of looking at and studying problems, but the incident method puts greater emphasis on the importance of getting all essential facts bearing on a problem before coming to a conclusion. The conference leader, in this method, possesses the complete and accurate facts about the problem situation, but only gives the conferees a single case or statement of an incident and the chance to ask questions which can be answered with a "yes" or "no." Then the conferees see a silent film on the incident. They are in somewhat the same position as a detective who must find the pertinent facts and evidence of a case, evaluate them, and then come to a conclusion. In using this method, it was found that: (a) many conferees persist in jumping to conclusions; (b) many ask identical or similar questions, indicating that they did not listen carefully; and (c) in many cases the leader must reword questions in order to allow for only a "yes" or "no" answer. The final step in using this method of solving problems is to divide the group into buzz groups of about five members each. On the basis of the facts that the group as a whole obtained, the buzz groups are to arrive at a solution to the problem.

PRACTICAL HOME ECONOMICS

Vol. 33, September, 1954

* Guiding teen-agers to good eating habits. A. J. Bricker.—p. 48.
* Weight control through self-selection.—p. 50.

Vol. 33, October, 1954

* A career in dietetics. R. M. Caldwell.—p. 28.
* Cheese. J. de Goumois.—p. 44.
* Vitamin A in the school lunch. M. L. Cronan.—p. 50.

Teen-Age Overweight. This article gives pointers on teen-age weight control and the development of food eating habits. One of the most persistent myths about overweight is that adolescent fat is just temporary. Actually, the teen-ager is developing eating habits which he or she will probably follow all through life. Teachers try to warn about overweight in language the students don't understand—balanced diets, nutrients, minerals, and vitamins. If a teacher talked to teen-age girls about weight in relation to "popularity," "radiance," or "looking well in your clothes," the girls would know what she meant. The teen-ager, in trying to develop good eating habits, must have cooperation at home and nutritional meals to serve as a pattern. Often overweight is not due to the amount of food eaten, but the choice. After-school sodas, popcorn and candy while watching television, and food at friends' homes and at movies all add up to excess weight. Girls are also easily tempted by the "nine-day" diets, the reducing drugs, and the patent devices which are widely advertised. More instruction about meals, about eating breakfast especially, and about substituting foods that are nutritious, good, and non-fattening for high-caloric snacks and party food would prevent much of the personal complexes present in overweight high school children, many of whom carry their eating habits with them through life.

Teen-Age Food Selection. The most important factor in controlling weight in teen-agers is self-selection. Recent studies have shown shocking inadequacies in teen-age girls' diets, and the students who were overweight had the poorest diets. One thing which contributed to nutritional inadequacies was the habit of skipping breakfast. Teen-agers hear a great deal about foods they shouldn't eat, but instruction in good food habits should emphasize foods they should eat. Adolescence is a critical period of rapid growth, activity, and vivid impressions, and food habits developed at that time usually last throughout adulthood. Instead of planning a set diet for girls for a week, home economics teachers should emphasize foods that belong in every good diet and

"Just a bug he picked up somewhere*..."

*Health authorities say only one dish in ten washed by hand is "safe".

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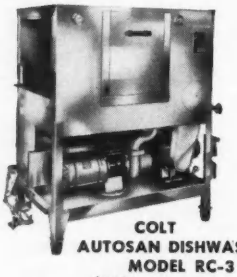

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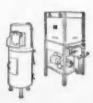

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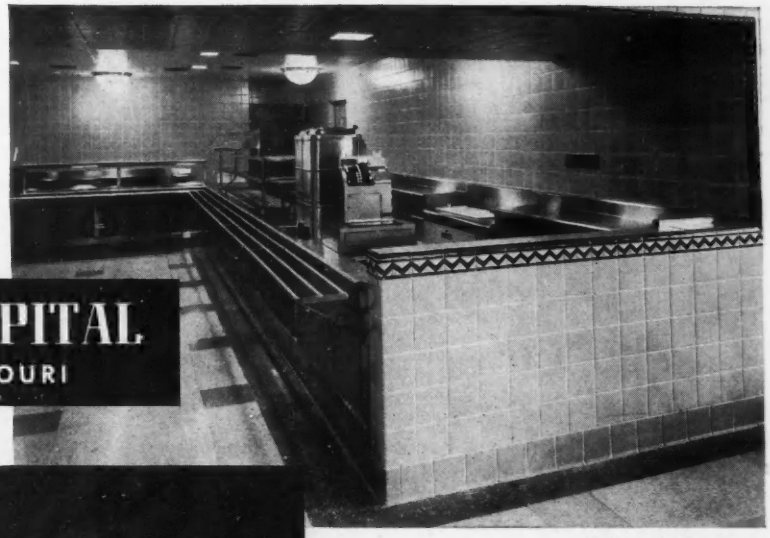

Cafeteria Service

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SPRINGFIELD, MISSOURI

Architects and Engineers
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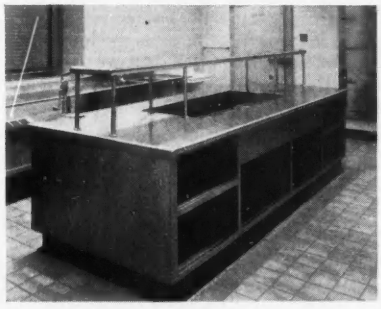


Salad Preparation Room

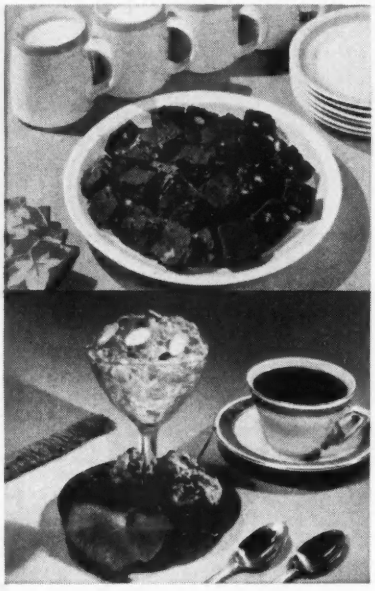
Main Kitchen

SOUTHERN
EQUIPMENT COMPANY

encourage students to choose those foods, not only in meals, but for social eating as well. Good looks and good health, as well as correct weight, should also be emphasized as the results of good food selection.

Dietetic Internship. Dietetic interns at Oklahoma A & M College receive fifty-two weeks of concentrated and versatile on-the-job training. Part of the intern's work consists of ordering, buying, inspecting, storing, and preparing food for which they have made menus. The five major student residences, in which over 10,000 meals a day are served, supply opportunities for excellent experience. Special courses for the interns in the Division of Agriculture provide knowledge of cheese-making, food preservation, and meats. Another feature in the College's dietetic education program is the emphasis put on the role of food service in public relations. The interns are given personalized help with regard to personality, weight, grooming, sociability, and the traits that promote better business relations. Their training prepares them to take their places in the field of dietetics as well educated, professionally trained persons.

Vitamin A in the School Lunch. A survey of school lunches by the U.S. Department of Agriculture revealed that diets of U.S. school children are deficient in vitamin A and ascorbic acid. This article suggests ways that dietitians, food supervisors who prepare school lunches, as well as those making lunches at home can economically and easily use more food rich in vitamin A. Also included are specific instructions on buying fruits and vegetables.



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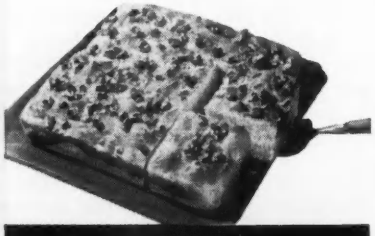

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the new non-caloric sweetener with
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RESTAURANT MANAGEMENT

Vol. 75, September, 1954

* Six steps that lead to sounder menu pricing. H. H. Pope.—p. 34.
* Analyzing your food cost percentage. L. F. Sins.—p. 36.
* The three standard commercial cafeteria layouts. A. W. Dana.—p. 41.
* Saving kitchen labor with the new bases and concentrates. M. Batey.—p. 46.

Menu Pricing. Labor costs in food establishments are a great proportion of expenses. Since many of these are indirect costs, the following system of labor cost analysis has been developed by the author. (a) Divide menu items into groups according to the method or place of preparation or service. (b) Determine the total dollar sales of each group of menu items. These figures may be estimated. (c) Determine the cost of labor which is used directly for the production and service of each group of items. (d) Determine the total labor not directly used for any particular group of items. (e) Assign the indirect labor cost to each group on a logical basis. For example, the cost of dishwashing can be divided proportionately according to the number of dishes used in serving each group. (f) Determine the labor cost percentage for each group by adding indirect and direct labor costs and dividing this total by the dollar sales for the group. This cost analysis should be conducted often enough to establish standard and current cost percentages. No sudden or drastic changes in price structure are desirable; however, when over-all increases or decreases are needed, an accurate knowledge of costs serves as a guide.

Analyzing Food Cost Percentage. This article, the ninth in a series on cutting restaurant expenses, deals with more effective payroll utilization. Actually there is no system that will work for every type of restaurant. Each one is affected by its customers, their habits, their likes and dislikes. Every restaurant cannot offer everything to its customers, and the operator must decide on the type of service. For instance, a restaurant cannot be a combination of French, Spanish, German, and American; a restaurant cannot be both large and small. Thus, the greatest factor in more effective payroll utilization is the comparison of capacity with turnover. There cannot be generalization in determining payroll utilization. A determining factor in improving turnover and cutting labor costs is to find the causes of employee inefficiency, of which there are a number. Then analyze the causes, dividing employees into the following groups: (a) reception and seating of customers; (b) order-taking and delivery to kitchen; (c) food preparation; (d) food service; (e) issuance and payment of check; and (f) table clearance. These six groups, in order, account for the time a customer is in a restaurant.

Versatile flavor-builder . . . rich in real chicken!

Let this real chicken product with true chicken flavor help you bring extra flavor to your foods, extra efficiency to your kitchen. Use it in many ways to add zest, save hours, reduce expenses, accurately control costs! Le Gout Chicken Base is made from all the meat of freshly-roasted select chickens and is processed under the supervision of the U. S. Department of Agriculture. Besides being an instant source of full-bodied, perfectly-seasoned chicken soup, Le Gout Chicken is excellent for enriching your own stock. Likewise, it adds delicious, extra chicken flavor to gravies, chicken salads, chicken a la king, croquettes, meat loaves, vegetables, countless other dishes. Ask the Le Gout Man or your jobber for a demonstration.

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SAVE TIME, CUT COSTS, ADD ZEST—Tips on just a few of the many ways to use Le Gout Chicken with excellent results:

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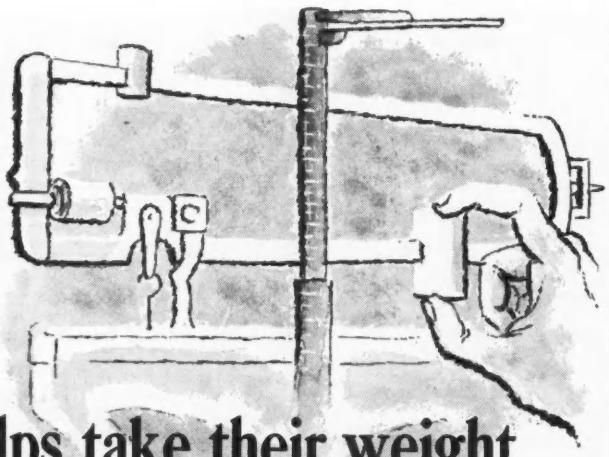

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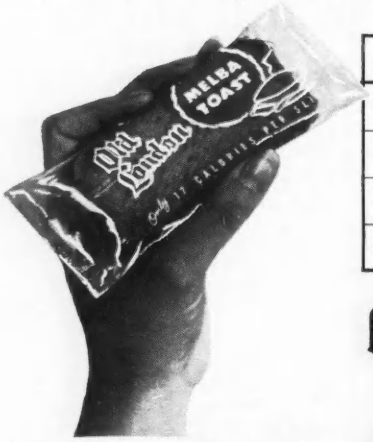

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Old London Melba Toast	17 Calories per slice
Roll or Bun	120 Calories each
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Please rush me, without obligation, FREE samples and FREE information about Old London Individual Service Melba Toast.

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Cafeteria Layouts. The three types of commercial cafeteria layouts can be classified as: (a) assembly counter type; (b) free access counter type; and (c) counter line-up type. The different types of layouts have regional popularity, and, although all can reach a high efficiency in customer turnover and cost control, some are more efficient than others. This article describes all of the layouts and tells how each can be improved and the factors that will give the operator greater efficiency and a larger profit.

Labor Savers. New bases and concentrates take much of the work out of food preparation. For instance, flavorsome soups, gravies, dressings, custards, and many other special dishes can now be prepared with little effort. However, to use a base successfully, it must be made with fine ingredients. The same applies to mixes and thickeners. Breading mixes are available in several varieties, the simplest of which contains plain bread crumbs. Others which have seasoning, milk solids, eggs, and pre-cooked wheat added eliminate the use of flour, egg batter, and such. They act as seals to keep juices in and produce a crisp, brown crust on the exterior of the finished foods. Other aids in saving preparation time are tenderizers, whipped potato powder, pre-cooked dried beans and rice, pre-cleaned and processed vegetables, and frozen foods and fruit concentrates. This article gives tips on the correct use of these labor-saving foods, but also points out the need for using the best of each type if the finished result is to be worth even the time saved in preparation.

WHAT'S NEW IN HOME ECONOMICS

Vol. 18, October, 1954

* How to buy and how to use quick-frozen foods. F. L. Beinert.—p. 52.

Frozen Foods. Quick-frozen foods, introduced only a little over a quarter of a century ago, have become a part of the American homemaker's life. Experiments by the U. S. Department of Agriculture show that partial use of quick frozen foods in three daily meals for a family cut the hours spent in the kitchen almost in half. When meals are planned to use as many of the frozen foods as possible, the time-saving was 71 per cent. Frozen foods are actually fresh foods in season any time of the year. They are not only easy to prepare, but are packaged economically to save space, and come with detailed and simple instructions on how to prepare, serve, and store. As this article points out, there are many factors in the buying, storage, and preparation of frozen foods that will give the consumer his money's worth in nutrition, taste, and lengthy storage. This article presents data on the buying, storage, handling, use, and cooking of various frozen foods. A table gives package sizes, number of servings, maximum storage, thawing information, cooking time, and comments on: (a) fruits, (b) juices—concentrates, (c) vegetables, (d) meats, (e) poultry, (f) sea foods—fish, and (g) specialties.

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THE "CITRUS SNACK"

CHILDHOOD—to help correct and prevent vitamin C deficiencies reported in an alarmingly high percentage of grade school youngsters.

ADOLESCENCE—to give C-minus teen-agers the right kind of between-meals pick-up to effect C-plus nutrition.

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News Notes

Miss Gleiser Named Government Consultant. Announcement has been made of the appointment as consultant of Fern Gleiser, A.D.A. President, to the Task Force to study Subsistence Services in the government. This Task Force was organized on the recommendation of the Commission on Organization of the Executive Branch of the Government, for which Herbert Hoover is Chairman. Its work will be to study all government subsistence operations within the continental U. S., including such agencies as the Department of Defense; Department of Health, Education, and Welfare; Bureau of Prisons; Bureau of Indian Affairs; and the Veterans Administration. In her capacity as Consultant, Miss Gleiser will evaluate the curricula of the various service schools offering courses in the food field.

Winners of Administration Contest. Last spring, the Food Administration Section of A.D.A. announced a contest for the best report on "What We Have Done to Improve Supervision in Our Food Service Unit." Twenty-four entries from twenty-one states were received in this contest, the winners for which were announced at the business meeting of the members of The American Dietetic Association in Philadelphia on October 26, 1954. Presentation of the awards was made by Cora E. Kusner, Chairman, to:

FIRST AWARD—an A.D.A. seal wall plaque
Ruth Nickel
St. Marys Hospital
Rochester, Minnesota
For: A guide to help dietary staff and auxiliary workers in the accurate requisitioning, issuing, and serving of food

SECOND AWARD—a copy of *Large Quantity Recipes* by Margaret E. Terrell
Ruth S. Dickie
University Hospitals
University of Wisconsin
Madison, Wisconsin
For: Task statements and performance standards

HONORABLE MENTION
Frances Zeman
Cleveland City Hospital
Cleveland, Ohio
For: Report of Cleveland City Hospital's training program for food service supervisors

Dietetic Residencies. *Ohio State University Hospital* in Columbus is now offering a residency program in dietetics for two experienced dietitians. These residents have the same status as residents in hospital administration, and the program of work is modeled on the residency in hospital administration offered at Ohio State. The residents carry 11 to 12 hr. of graduate study, write a thesis, and work on a project basis. Each should receive a master's degree at the end of four quarters. To be eligible, dietitians must have completed an approved dietetic internship and had three or more years of experience. Remuneration for the year is $1500. The residents pay their own fees, since the $1500 eliminates them from the "no fee" category. However, they can frequently obtain voidance of the out-of-state fees.

Barnes Hospital in St. Louis has also worked out a dietetic residency program. This course is planned to follow the internship, the requirements being a bachelor's degree and the completion of an approved internship. Residents receive $300 monthly for the twelve months of training. Areas of work which are covered during this year include: food administration; diet therapy; teaching; field work; access to a good medical library; an opportunity to carry the responsibility of a staff member for one year; instruction of student nurses, medical students, medical interns and residents, personnel, dietetic interns, and students in hospital administration; and special problems.

Features for December will be turkeys and eggs. The complete list of plentiful food as released by the U.S.D.A. follows:

Protein foods

Beef	Haddock
Chickens—broilers and fryers	Halibut
Dairy products	Pork
Eggs	Tuna, canned
	Turkeys
Shrimp	

Other foods

Almonds	Grapes
Dates	Oranges
Filberts	Rice
Grapefruit	Walnuts

Vegetables shortening and salad oils

[Consultation Service Available. The Division of Special Health Services, U. S. Public Health Service, Department of Health, Education, and Welfare has announced that special nutrition consultation services are now available from the Chronic Disease Program and the Heart Disease Control Program. These consultation services, which are made available to voluntary agencies, professional associations, colleges and universities, hospitals and private institutions, and health departments, are: (a) planning and/or participating in special studies involving the nutrition of persons with chronic diseases, welfare recipients, persons in institutions, and the like; (b) planning and/or participating in workshops, institutes, and meetings for professional people; (c) assistance in planning, developing, and evaluating educational materials and teaching aids; and (d) help in appraising current community nutrition services and programs. Requests for the services of the nutritionist may be arranged by the State Health Department through the Public Health Service Regional Medical Director in the Regional Office.

Diabetes Control Courses. Again, for the fourth year, the Division of Special Health Services, Public Health Service, Department of Health, Education, and Welfare will sponsor courses in diabetes control at the Diabetes Field Research and Training Unit, Boston. These free, one-week courses will be planned to include discussions, demonstrations, and field trips, and will be limited to ten participants in most instances. The course of "Nutritional Aspects of a Diabetes Program" will be conducted from May 9 to 13, 1955. Other courses to help physicians, public health administrators, nurses, educators, medical technologists, and medical social workers will also be offered. Further information may be obtained from the Diabetes Field Research and Training Unit, U. S. Public Health Service, 639 Huntington Avenue, Boston 15.

New Government Food Regulations. Grade standards for frozen French-fried potatoes and for frozen grape juice concentrate have been issued by the Department of Agriculture. Standards for the frozen French-fries apply to Irish potatoes prepared French-fry style, partially deep fried, and frozen. This product has developed in recent years from a small volume specialty to one of the largest in the frozen food industry. Principal factors of quality in frozen French-fried potatoes are color, absence of defects, and texture. The grades which will be used are: "U. S. Grade A" or "U. S. Fancy"; "U. S. Grade B" or "U. S. Extra Standard"; and "Substandard."

The proposed standards for frozen grape juice concentrate, from which a grape beverage is made when mixed with a specified amount of water, apply to products made from Concord-type grapes of the Labrusca species, from any single variety type other than Concord, or from two or more varieties of grapes. The proposed standards provide for classifying the product as "U. S. Grade A" or "U. S. Fancy"; "U. S. Grade B" or "U. S. Choice"; and "Substandard." Quality is determined on the basis of color, defects, and flavor, and the product must also mix properly into a grape beverage.

Tolerances for pesticide residues on fresh fruits and vegetables is the sub-

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Use the appeal of a beautiful color in your cream service. Clear, brilliant Hall underglaze colors, fused with body and glaze by our single-fire process, will not fade or wear away. Your choice of color is available in all Hall China . . . casseroles, baking dishes, coffee and teapots, creamers, jugs, ash trays, and many other items. Write for color chart.

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Cadet	Dresden	Green	Lune Blue	Pink	Tan	

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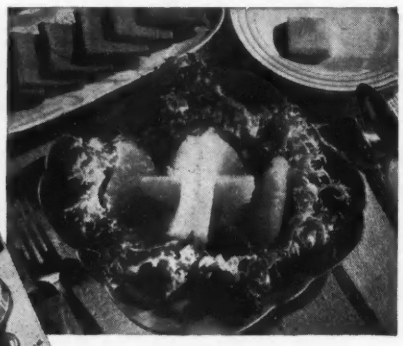
Restricted
DIETS



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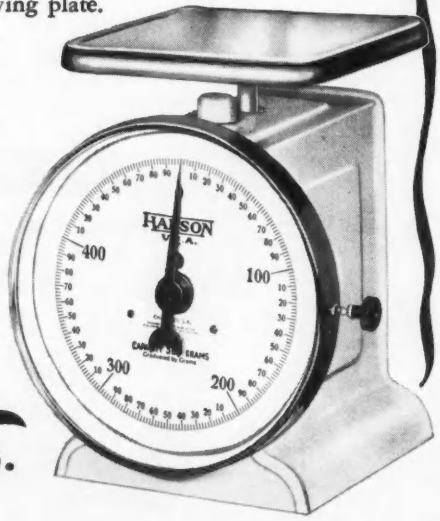

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ject of proposed regulations issued by the Food and Drug Administration of the Department of Health, Education, and Welfare. The regulations will cover twenty-six pesticides ranging from those which are virtually harmless to some which are among the most potent poisons known. For each pesticide, the amount of the tolerance and the food crops to which each applies have been listed. Under the proposed regulations any of the listed fruits and vegetables could legally be distributed in interstate commerce if it does not carry more than the specified tolerance of a permitted pesticide. Combinations of pesticide residues with related pharmacologic effects are limited, so that the total amount of combined residues will be safe.

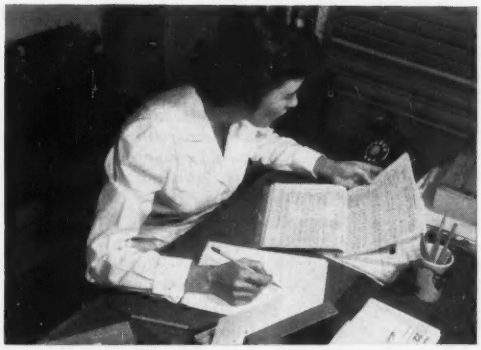
Food Protection Program. Through the efforts of the National Sanitation Foundation, a National Industry-Health Council on Food and Beverage Sanitation has been formed with the sponsorship of the National Restaurant Association, the American Hotel Association, the Tavern Keepers Association and the entire food industry, in cooperation with the U. S. Public Health Service and state and local officials. It is the thought of the Council that a sound educational program in the home and in the school, as well as in the food industry, is necessary to meet the objective of quality food, well cooked and served in a clean and sanitary manner in clean surroundings. To this end, the Council is planning to sponsor a "Food Protection Program for the Nation" and has already issued a brochure which details specific recommendations to be used as a basis for further action. This brochure may be obtained from The National Sanitation Foundation, Ann Arbor, Michigan. Although formed only recently, the Council and its program have been endorsed by resolution by the New York City Board of Health.

Government Publications. A new U.S.D.A. publication is "Egg Buying Guides for Consumers," prepared by the Poultry Division of the Agricultural Marketing Service as Home and Garden Bulletin No. 26. This illustrated, eight-page booklet gives advice on selecting eggs for their various uses in the home and tries to answer the many questions consumers ask the Department of Agriculture about quality and grade-labeling of eggs. It contains brief facts on nutritive value, care of eggs to hold quality, and what determines U. S. grades and sizes. Also included are information on recognizing and understanding labels, a table of comparative values of eggs of different sizes but the same grade, illustrations of shields used as grade marks on egg cartons with explanations of what the words and letters or numbers mean, and photographs that show grades of eggs and their characteristics when raw, poached, fried, or hard-boiled. Copies are available from the Government Printing Office, Washington 25, D. C., for 10 cents each.

The U.S.D.A. has released as Marketing Research Report No. 73, "Availability and Display of Frozen Foods in

Taste Panel checks every recipe in Monsanto booklet. Based on their written comments, each recipe is tested and retested until it meets full approval of panel.

More variety in your low-calorie meal planning is the result of using this booklet.



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Retail Stores." In this study, twenty-seven samples stores were surveyed in Washington, D. C. for a six-week period. The findings indicated that concentrates brought the highest profit of all the categories listed, followed by meats, prepared foods, vegetables, poultry, fruit, seafoods, and pet food, in that order. Of all the factors tested, condition of display, which took into consideration the orderliness, price marking, frosted packages, and damaged packages, had the most important effect on frozen food sales. In some of the stores there appeared a need for better display equipment, even though many of such stores did not make use of the equipment they had. The booklet gives descriptions of sample stores and is illustrated throughout with descriptive charts and tables. Copies may be obtained from the Government Printing Office for 25 cents each.

The Woman's Bureau of the U. S. Department of Labor has released a *Bibliography on Employment Problems of Older Women* which deals with the following subjects basic to any consideration of the employment problems faced by mature women: (a) hiring restrictions, (b) psychologic barriers, and (c) work performance. The booklet contains summaries and high lights of sixty-three articles and publications concerning these problems by authorities in geriatrics. Reference to articles concerning older people in general are included, since the problems of old age are faced by both men and women. Single copies may be purchased from the Government Printing office, for 35 cents each.

Dehydrated Eggs. The National Academy of Sciences—National Research Council has published the proceedings of a symposium entitled "Stability of Dehydrated Eggs." Problems concerning the production of dehydrated eggs of satisfactory keeping quality are among the greatest of the Armed Forces' food problems. Although there has been great advancement in the production of dehydrated eggs since they were first developed, and tremendous amounts of time and money have been spent in research in an attempt to produce dehydrated eggs that will keep for a minimum of several months without loss of flavor or the development of undesirable odors and flavors, problems still remain. This symposium report contains data from groups of researchers in university, government, and industry. The articles are divided into these two groups: (a) evaluation of the acidified and the glucose-free types, and (b) Salmonella problems. Copies of this report are being distributed by the Quartermaster Food and Container Institute for the Armed Forces, 1819 West Pershing Road, Chicago 9

Dietetics on TV. An unusual addition to the A.D.A. library is a television skit entitled "Dietetics as a Profession" written by Gladys Roehm, Ph.D., of the Home Economics Department, Montana State College, Bozeman. The 15-min. skit was produced in July in Butte, and, although it was written primarily for Montana consumption, it could be adapted to other states. The skit explains the field of dietetics and would be of interest to students entering college and those who are considering dietetics as a vocation. Mrs. Roehm has volunteered to send the skit to interested persons for 10 cents a copy to cover mimeographing and mailing charges.

Monsanto Award. Dr. Harry J. Deuel, Jr. of the University of Southern California was the recipient of the Monsanto Award for 1954. This award is given annually by Monsanto Chemical Company and the Institute of Food Technologists jointly for the best paper presented at the Institute's annual meeting. The paper which brought Dr. Deuel the award of a bronze plaque and $200 was entitled "Newer Concepts of the Role of Fats and the Essential Fatty Acids in the Diet." The award is designed to furnish an incentive to speakers to project their data and conclusions out to their listeners with maximum effectiveness. Final judging of the participants was based on organization of material and illustrative matter, as well as voice, diction, poise, use of manuscript, and ability to hold audience interest.

American Board of Nutrition. The American Board of Nutrition has announced the certification of Dr. A. E. Schaefer and Dr. T. B. VanItallie as Specialists in Human Nutrition. The

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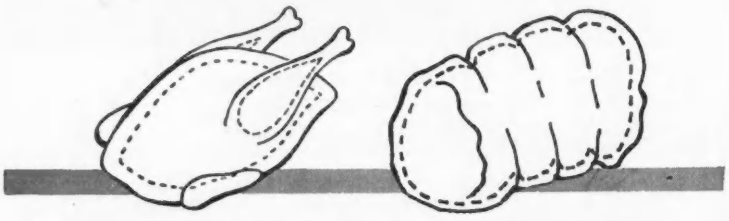

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You know that low-temperature roasting is the key to savings on meat shrinkage. Why run up your costs by hurrying your meats and poultry in crowded oven space not large enough for your needs? Blodgett's large hearth area (five 25–35 lb. turkeys per deck) gives you the CAPACITY you need. Blodgett's accurate thermostats give you CONTROLLED roasting. Blodgett's heavy insulation (4" fiberglass) gives you the most from your fuel.

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Board will hold its next certifying examinations during April, 1955 at locations convenient to candidates. For those who wish to be considered for certification, application forms may be obtained from the Secretary. Otto A. Bessey, Department of Biochemistry and Nutrition, University of Texas School of Medicine, Galveston.

DuBois Scholarships. According to a report from the T.V. DuBois Foundation, twelve dietetic interns are now receiving financial help through scholarships awarded by the Foundation to ten state dietetic associations in 1954. These states are: California, Connecticut, Illinois, Kentucky, Massachusetts, Nebraska, Ohio, Rhode Island, Tennessee, and West Virginia. Commitments for 1955 have also been made by the Foundation to the state associations of Georgia, Iowa, Vermont, and New York, as well as to the Catholic Hospital Association.

Interns Graduate. Ancker Hospital of St. Paul, Minnesota, announces the graduation of six dietetic interns for the year 1954. Certificates and Ancker Hospital pins were presented to the new dietitians by Dr. Thomas E. Broadie, Superintendent, and Winifred H. Erickson, Director of Dietetics. The graduates were: Lois Arlene Deacon, Lansing, Michigan; Lois Jane Fenton, Salt Lake City; Elizabeth Kasson Zuehlke, Escanaba, Michigan; Ferne Bergren Wright, Sioux Falls, South Dakota; Mary Margaret Scheaffer, Chapman, Kansas; and Betty Lou Thesing, Lewiston, Minnesota.

Film Library for Restaurateurs. The National Restaurant Association recently established a film library, the purpose of which is to provide visual training aids for restaurant managers. The majority of the films are geared to employee training. Among the subjects covered are: employee relations, training for specific restaurant jobs, equipment care, and arrangement, and public relations. Specifically, some of the films which have been placed in the library's collection are: "Now I'm in Business" by G. S. Blakeslee & Company; "Safe Service" by the Paper Cup and Container Institute; "Serving Up Sales" from Anetsberger Brothers; "Specialty of the House" by The Coffee Brewing Institute; "Skill Counts at the Sandwich Counter" by the Wheat Flour Institute; and "The Winner" produced by Cleveland Range Company. A film catalog has been prepared by the National Restaurant Association which includes a description of the films available, as well as order blanks. Most of the films will be loaned on a free basis, although there will be nominial rental charges for a few.

Frozen Strawberry Concentrate. A new frozen strawberry-juice concentrate that may be used not only for jelly, but also for a beverage, sherbet, and candy, has been developed by scientists of the U.S.D.A.'s Western Regional Research Laboratory in Albany, California, working in cooperation with private industry. The new concentrate is a promising outlet for the sound berries that are ruled out of fresh and frozen packs because of their appearance—too small, misshapen, or slightly blemished. The concentrate produces a sparkling clear, colorful juice that is high in natural strawberry flavor.

Canned Tomatoes in Restaurant Usage. The Can Manufacturers Institute reports that canned tomatoes are the most popular canned food served by institutions. It was found that more canned tomatoes are bought by restaurants and other institutional users than any other canned vegetable or fruit, the average weekly use per unit being 42.3 cans—all but a small fraction, the No. 10 size. The survey covered restaurants, hotels, and other institutional kitchens serving 120 million meals a week. Also, tomato products, such as purée and paste, dominate the list of ingredients chefs prefer to use in canned form for soups and sauces.

New Cranberries. Research in cranberry breeding by the Department of Agriculture, the New Jersey and the Massachusetts Experiment Stations, and the cranberry industry has resulted in the development of three new cranberry varieties which are highly productive and which make excellent sauce and jelly. The new varieties,—Stevens, Wilcox, and Beckwith—are still being tested to be certain that in every respect they are worth replacing the older varieties.

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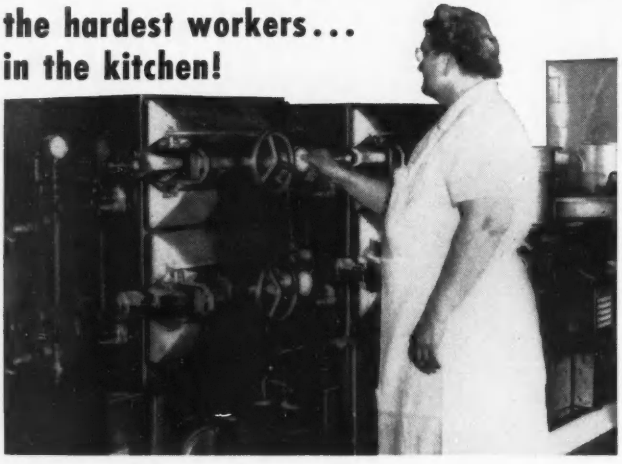

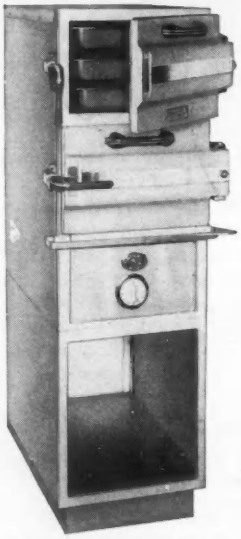

Steamcraft for smaller kitchens available in one or two compartment models for floor or counter top use.

Steamcraft and STEAM-CHEF cook vegetables, meats, fish, fowl, cereals, desserts and eggs at the lowest possible cooking cost—up to 50 servings for one cent.

With Steamcraft or STEAM-CHEF cooking, your foods look and taste better. Vitamins, minerals and natural colors are not "cooked away" and the garden-fresh look of vegetables is retained.

Cooking is simplified and kitchen bottlenecks are eased. Many pots and pans are eliminated and ranges are freed for other jobs. Pots and pans can't scorch . . . foods can't burn. Food spoilage, waste and shrinkage are held to a minimum.

Steamcraft or STEAM-CHEF is ideal for heating frozen or canned foods, re-heating, precooking, blanching and canning. For full details and information on what Steamcraft or STEAM-CHEF can do for you, write to:

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Katharine Harris. Katharine Wyckoff Harris, Professor and Head of the Department of Institution Management, New York State College of Home Economics, Cornell University, Ithaca, died unexpectedly on October 19. Miss Harris was a graduate of the College of Home Economics at Cornell. Following work as a student dietitian at Presbyterian Hospital, she served as Head Dietitian, Starling Loving Hospital, Ohio State University, for nearly four years, after which she joined the faculty at Cornell. Since 1933 she had been Professor and Head of the Department of Institution Management. She had also done graduate work at the University of Chicago and received a master's degree from Teachers College, Columbia University.

Miss Harris was an active member of many professional organizations. Her activities in dietetics included service on the Nominating Committee of A.D.A. on two different occasions; membership on the A.D.A. Publications Committee and the House of Delegates; chairmanship of a project of the Food Administration Section; and vice-presidency of the New York State Dietetic Association. Other memberships in professional organizations included: American and New York State Home Economics Associations; American and New York State Food Service Associations; Regents School Lunch Advisory Committee; Advisory Committee on Standards and Grades, Poultry Marketing Administration, U.S. Department of Agriculture; and the New York State Civil Defense Committee, for which she prepared a "Handbook on Emergency Feeding." She was also technical advisor for the American Red Cross on the revision of canteen courses and preparation of supplementary teaching material. She was a member of Omicron Nu, Phi Kappa Phi, and Sigma Delta Epsilon. With Marion Wood Crosby, formerly of Cornell, Miss Harris was co-author of the widely used *Meals for Many* which was revised in 1951, and retitled *Quantity Recipes* . She had published many articles on institutional food preparation and service in professional journals and had assisted in the preparation of the Army and Navy cook books.

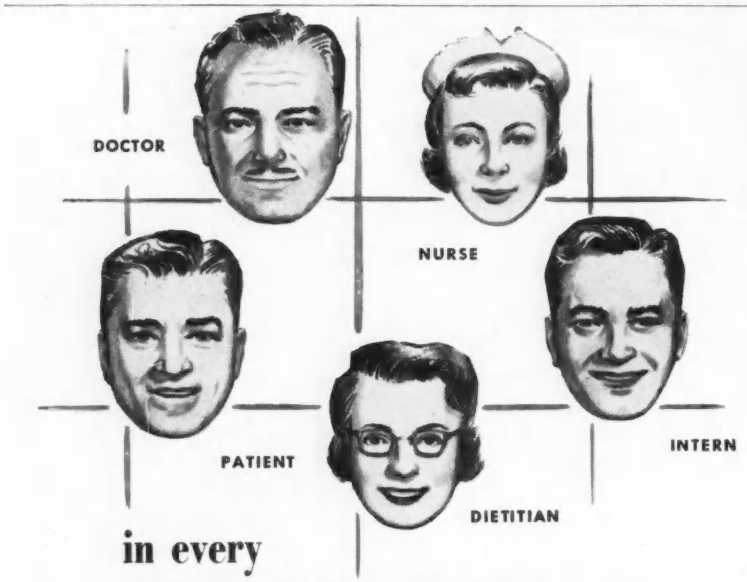
She was known for her part in developing work in institution management at the university level, and she was the instigator of an extension program in institution management in Cornell, the only one of its kind for many years. As one of those who felt strongly that research was much needed in institution management, she initiated a research program at Cornell which has continued to expand. During her tenure, extensive studies were conducted on the retention of nutritive value and palatability in quantity vegetable preparation.

Miss Harris' associates, former students, and friends have started a memorial fund in her honor, which will probably take the form of a scholarship. Those interested in contributing may send checks to: The Harris Fund, % A. H. Peterson, Roberts Hall, Cornell University, Ithaca, New York. Checks should be made payable to Cornell University.

Elizabeth Guilford. The A.D.A. office has been notified of the death on October 29 of Elizabeth Guilford, for many years Nutrition Director of the Metropolitan Life Insurance Company, New York City. Miss Guilford had been active in A.D.A. affairs for many years, having been a member since 1931. Following her retirement several years ago, she made her home in Lancaster, Pennsylvania.

News of State Associations

California Dietetic Association. In October, the Bay Section of the California Dietetic Association met on the University of California Berkeley campus. Speaker of the evening was Dr. Ruth Okey of the University's Home Economics staff, who talked on her research on the influence of various dietary factors on cholesterol. A discussion of proposed changes in A.D.A. membership requirements resulted in a number of suggestions being made for referral to the national committee. The aims and goals of the national Association were also reviewed. Officers of the Bay Section for this year will be: Chairman, Dr. Ruth Huenemann, University of California, Berkeley; Chairman-Elect, Dolores Nyhus, California Department of Health, San Francisco; Secretary,



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Joan Raftery, Berkeley; and Treasurer, Barbara Pearce, San Francisco.

Georgia Dietetic Association. On November 12, the Georgia Dietetic Association met at the Warm Springs Foundation, Warm Springs. Featured speaker of the meeting was Dr. Robert L. Bennett, Director of the Foundation, who discussed "What's New in Treating the Polio Patient." Reports of the 37th Annual Meeting of The American Dietetic Association in Philadelphia were presented by Margaret Dykes, Delegate.

Officers for 1954–55 of the Georgia Association are: President, Marjorie Massee, Grady Memorial and Georgia Baptist Hospitals, Atlanta; President-Elect, Josephine Martin, Georgia School Lunch Supervisor, Atlanta; Secretary, Martha E. Clark, Emory University Hospital, Emory University; and Gwendolyn Biggerstaff, Georgia Warm Springs Foundation.

Hawaii Dietetic Association. At its October meeting, members of the Hawaii Dietetic Association heard a paper on "Nutritional Care of Post-Operative Patients" by Dr. Robert Elman, Professor of Clinical Surgery, Washington University School of Medicine, St. Louis. Dr. Elman was visiting in Honolulu to attend the Pan-Pacific Surgical Conference. He stressed the need for water, carbohydrate, fat, protein, minerals, and vitamins to keep the postoperative patient in status quo. He also emphasized the important problem of bringing the specialists—physician, dietitian, and nurse—together to achieve the common objective of helping the patient.

Pennsylvania Dietetic Association. The following officers have been elected by the *Central Pennsylvania Dietetic Association* for the coming year: President, Clara Kurtz, Reading General Hospital; Vice-President, Mabel Whittaker, Cresson Sanatorium; and Secretary-Treasurer, Charlotte Liggett, Geisinger Hospital.

Texas Dietetic Association. The *Dallas Dietetic Association* in cooperation with the Dallas City Health Department conducted an "Educational Program in Nutrition for the Obese" from March 22 through June 22 of this year. Those attending were divided into age groups and instructed in the correct, properly balanced foods necessary for desirable weight and diet. At the end of the summer, those who participated were sent questionnaires asking for their evaluation of the results of the program. The entire plan of the project was mimeographed by the Dallas Health Museum, where the courses were held, the City Health Department, and the Dallas Dietetic Association. Included in this report are samples of the forms used, such as the registration form, the individual progress chart, a calorie list prepared on the "exchange list" formula, and "meal plans" suggested for use with the exchange groups of foods. Eight members of the Dallas Association served as the group leaders for the project: Eileen Williams, Katheryn Philippi, Juanita Key, Julia Barney, Barbara Luther, Frances Hitt, Marjorie Brown, and Patricia Albright.

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Association Activities

State Meetings. The following national representatives are attending state dietetic association meetings:

November 3-5—Mary Reeves, Florida Dietetic Association, St. Petersburg
November 5-6—Mildred Bonnell, Idaho Dietetic Association, Moscow
November 9-10—Lillian S. Coover, South Dakota Dietetic Association, Aberdeen
November 11-12—Jane Hartman, North Carolina Dietetic Association, Greensboro
November 11-12—Mary Reeves, Tennessee Dietetic Association, Memphis
November 12—E. Neige Todhunter, South Carolina Dietetic Association, Columbia
November 12-13—Clara Zempel, Louisiana Dietetic Association, Alexandria
November 13—Doris Odle, Kansas Dietetic Association, Wichita
November 13—Martha N. Lewis, West Virginia Dietetic Association, Charleston
November 18—Ruth M. Yakel, New Jersey Dietetic Association, Convent Station

the inside story of making profitable toast!

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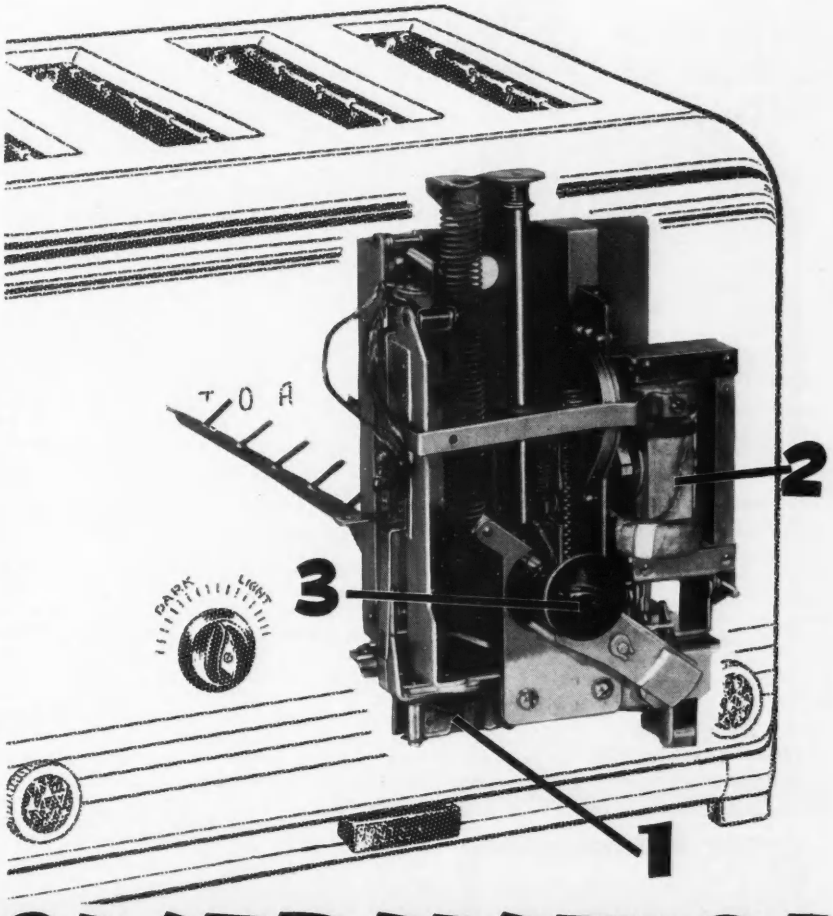

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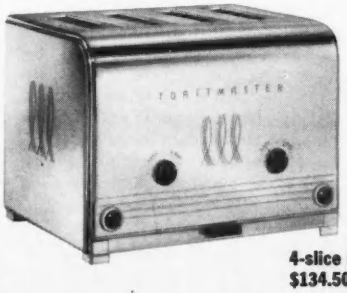

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November 19–20—Cora Kusner, Montana Dietetic Association, Great Falls
November 20—Doris Odle, Arizona Dietetic Association, Tempe

Representatives at Allied Associations. Marion Floyd represented A.D.A. at the *National Conference on FAO* in Washington, D.C., on September 16. At this first meeting, a review of the organization was given, and a progress report of FAO activities was made, in which a point of interest was the need of more young people seeking opportunities in FAO.

Nelda Ross Larson attended the *Bicentennial Conference of the College of Pharmacy at Columbia University* on October 14. Iva Moen and Jane Andrews also attended this meeting.

The 1954 *New York* Herald Tribune *Forum* on "Progress of Freedom in the United States" was held October 18 and 19 in New York City. Dorothy Kinnear represented A.D.A. at this function. The first day's meeting had as its theme, "Steps Toward Racial Integration," while on the second day, "New Objectives in Government" were considered.

A.D.A. Exhibits. "Achieve Your Proper Weight" was exhibited at the 82nd Annual Meeting of the *American Public Health Association* in Buffalo, October 11 through 15. Ruth C. Cottringer, Chairman of the exhibit, was assisted by members of the Buffalo Dietetic Association who acted as booth attendants.

The 95th Annual Session of the *American Dental Association* was held November 8 through 11 in Miami. The exhibit shown was "Nutrition and Dental Health." Members of the Miami Dietetic Association were booth attendants, chairmaned by Virginia Hunt Halenda. A new leaflet, "More Please!" was introduced as a "give-away" at this meeting.

News of Products and Services

Armour and Co. released late in October a 16 mm. color-sound film entitled "Fresh Frosted Meats for the Food Service Industry." This film, which is loaned free, except for return postage, runs approximately 24 min. and outlines the advantages offered in control of cost, labor, and time of fresh frosted portion meats. It also demonstrates proper care and cookery techniques and gives recipes for use of meats packaged in this way. An accompanying six-page folder has been prepared for use with the film, which includes directions for handling fresh frosted meats and the recipes demonstrated in the film for veal cutlets with Creole sauce, sliced beef liver, spiced Swiss steak, barbecued pork chops, and garlic butter balls. An effective chart also provides data on: average weight of portion, piece count per 10-lb. box, description of the product, and suggestions for cooking for Armour's twenty-two fresh frosted meat products.

The Coffee Brewing Institute, Inc., has recently issued a small booklet on "Coffee Brewing" to help employees make the "perfect" cup of coffee. Directions on making coffee by both the urn brewing method (including instructions on cleaning and care of urns) and the vacuum brewing method are given in detail, as well as a method of preparing iced coffee. The booklet also supplements the Institute's new film on quantity coffee brewing, "Speciality of the House."

General Mills, Inc. has announced that it is starting a line of prepared baking mixes, breakfast cereals, and other products specially created and packaged for hotels, restaurants, and institutions. The line will include nine cake mixes; two enriched yeast-raised mixes from which an unlimited variety of rolls and pastries can be prepared; five enriched hot bread, muffin, and doughnut mixes; three griddle mixes; homogenized pie crust mix; four ready-to-eat cereals; monosodium glutamate; and cellulose sponges.

This month the *Cling Peach Advisory Board* will launch a special promotional drive to encourage institutional use of cling peaches. To back up this campaign, a sixteen-page booklet on "Quantity Recipes Using Canned Cling Peaches from California" is available on request. Fifty recipes for peach desserts and salads using canned cling peaches and fruit cocktail are detailed for quantities ranging from twenty-four to fifty servings. Other "tie-ins" have been prepared for classroom use, including a series of stencils to be run off and distributed as lesson sheets and a printed recipe sheet which provides basic data on canned cling peaches and canned sizes and capacities, as well as six recipes. A teacher's manual supplements the recipe sheet. Two full-color wall posters featuring illustrated recipes for "cling peach whip" and "peach wedding ring salad" may also be obtained for display. In addition to these printed materials, a color movie or film strip showing growing and canning of cling peaches and preparation and serving techniques may be borrowed from the Cling Peach Advisory Board.

"Brown Swiss," a dry creamed cocoa, was introduced by *Webster Van Winkle Corporation* at the A.D.A. Annual Meeting in Philadelphia. Made from pure fresh cream, milk solids, and cocoa, the product was developed especially for the institutional trade. "Brown Swiss" is instantly soluble in hot water and may be served either hot or cold. It is creamy in appearance, and there is a minimum of settling. It is packaged in 15-oz. cans which will make 12 cups of cocoa.

Landers, Frary & Clark has introduced the "Stanley Thermal Serving Bowl" for use in serving hot or cold foods. This container, which is $4^{13}/_{16}$ in. in diameter and $2^{7}/_{8}$ in. high, holds 6 oz. of food. Fully insulated, this double-walled stainless steel bowl can be used for salads, soups, cereals, ice cream, or any food which should be kept at proper temperature, either hot or cold. It has also been designed to stack, thus promoting ease in handling and storing when empty.

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The following abbreviations indicate the source of the material indexed: "ab," abstract under Current Literature; "br," Book Reviews; "cc," Current Comment; "ed," Editorial; "f," filler; and "nn," News Notes. An asterisk indicates an original article in this JOURNAL. Book Reviews appear in the subject index under "Book Reviews." The Author Index, which follows the Subject Index, includes only the names of the authors of original material appearing in this JOURNAL in full or abstracted in the Editorial section or in fillers, and the authors and reviewers of books reviewed.

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THE QUAKER OATS COMPANY
Chicago 54, Illinois

GOLDEN CORN MUFFINS

Quick Bread
100 medium muffins

Portion: 2 muffins — Total Weight of Batter: 8 lb.

INGREDIENTS	AMOUNT	WEIGHT	COST
Quaker Enriched Yellow Corn Meal	1½ quarts	1 lb. 14 oz.	
Flour, sifted	1½ quarts	1½ lb.	
Sugar	1 cup	½ lb.	
Salt	1 tablespoon		
Baking Powder	⅓ cup		
Eggs	4 eggs	7 oz. (E.P.)	
Milk	1½ quarts		
Shortening, soft	1½ cups	12 oz.	

Directions

1. Sift together dry ingredients into mixer bowl. Add eggs, milk and shortening.
2. Start mixer at low speed; increase to medium speed and beat until batter is fairly smooth, about ½ minute. *Do not overbeat.*
3. Fill greased muffin pans ⅔ full.
4. Bake in a hot oven (425°F.) about 20 minutes.

Corn Sticks: Bake in hot greased corn stick pans 15 to 20 minutes.
Corn Bread: Bake in two greased pans (16" x 10" x 2") 20 to 25 minutes.

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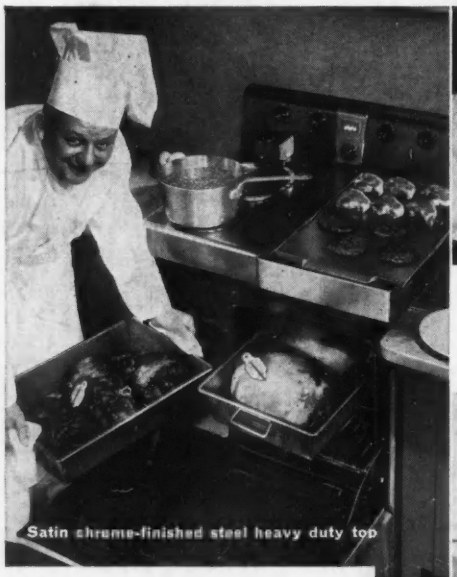

1 IT'S AN OVEN—roasts 2 12-lb. tender hams (24 lbs.) *and* 3 8-lb. pieces boneless rump roast (24 lbs.), total 48 lbs. of meat . . . *all in 3 hrs.* at 325°.

—bakes 6 9-inch fruit pies at a time (48 cuts) in 40 min. at 425°.

2 IT'S A FRY KETTLE*—deep fat fries 240 2-oz. servings of perfectly finished french-fried potatoes an hour by using the familiar blanch and fry-off method.

3 IT'S A HOTPLATE—produces 120 3-oz. servings of mashed potatoes *and* 3½ gallons of soup (80 5-oz. servings) *and* 100 2½-oz. servings of vegetables—*all at once!*

4 IT'S A BROILER—capable of broiling 48 12-oz., 1-inch thick strip-steaks an hour.

5 IT'S A GRIDDLE*—Griddles 288 3-inch, 2-oz. hamburgers an hour (24 per load).

*Optional at extra cost

Most Remarkable Commercial Cooking Development Since Hotpoint Introduced the "MARK 313"

Think of it—now you can be "in business" with just one piece of cooking equipment! Nothing else to buy for commercial cooking—no fry kettles, no griddles, no hotplate, no *anything*—because Hotpoint's astounding new *Quintette* has everything . . . does everything!

In the biggest establishments, *Quintette* is the ideal "extra hand" during rush hours, the perfect standby between times, because no matter what cooking operation you need, *Quintette* does it . . . fast! For the small establishment, *Quintette* is the answer to your prayer—*complete, all-electric* cooking in just *one* low cost unit—a smaller investment than you ever dreamed of for any kind of complete food service!

Says one food service official, "Nothing like it before! You're in business with just one piece of cooking equipment!" Another adds, "Complete all-electric cooking at the smallest investment anybody ever dreamed of!" And one major operator states "The *Quintette* has finally accomplished the goal of complete low-cost commercial cooking. The price in itself has amazed the entire restaurant industry!"

Use the coupon right now to get complete facts about this modern miracle.

SOLVES A MULTITUDE OF PROBLEMS FOR:

Hospital Diet Kitchens	Nursing Homes
Schools	Hotels
Factory Lunchrooms	Institutions
Church Kitchens	Clubs—Lodges
Small Restaurants	Large Restaurants

Recommended Retail Price F.O.B. Chicago, Illinois

$279.95

BASE PRICE†

†OPTIONAL EXTRA EQUIPMENT: Griddle fits over 2 right hand surface units. Deep fat fryer fits into deepwell at left rear.

Your equipment may be "new" but it's not modern unless it's

Hotpoint ALL ELECTRIC

HOTPOINT CO. A Division of General Electric Company

Commercial Cooking Equipment

Hotpoint Co., Commercial Equipment Dept.
225 South Seeley Avenue, Chicago 12, Ill.

☐ Please send us full information on the Hotpoint *Quintette*.

☐ Please send a representative to demonstrate and explain the Hotpoint *Quintette*.

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Address_____

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